2.1 Deposit institutions

Credit risk

2.1.1 BALANCE SHEET STRUCTURE, RISKS AND VULNERABILITIES

Lending by deposit institutions corresponding to their business in Spain fell by 3.9% year-on-year in December 2018. Lending by Spanish banks stood at €1.15 trillion in December 2018, having decreased by 3.9%, at a faster pace than in 2017 (see Chart 2.1.A). As shown in Chart 2.2, this greater deleveraging was across the board in institutions, both in terms of total credit and that extended to non-financial corporations. However, part of the decline is explained by the sale of NPL portfolios by some institutions. If NPLs are excluded from the analysis, the decline would be just 1.8%.

New credit in the past year increased by 11 %, compared with 2017. In keeping with the favourable macroeconomic conditions of the past year, the volume of new credit grew at a notable pace, albeit insufficient to offset repayments. In the past year, lending to households and non-financial corporations, either through new loans or an increase in the principal drawn down in existing loans, amounted to €441 billion (see Chart 2.1.B).

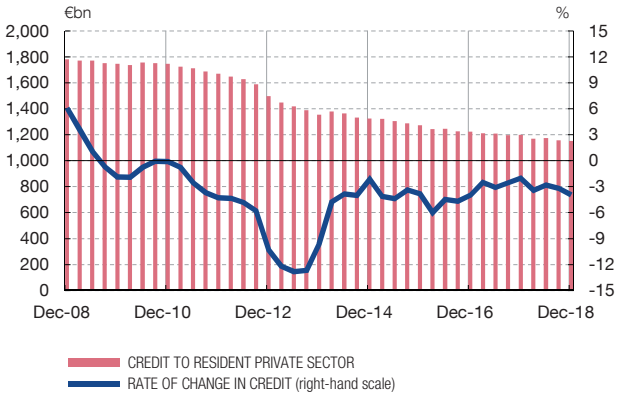
The volume of new credit grew in a setting of favourable credit supply conditions, in terms of interest rates and loan approval rates. Interest rates on new loans remained stable in 2018, with a narrow spread of 1 pp between loans of different sizes to firms, and a spread of 6 pp between the rate of new consumer loans and that of loans for house purchase. Interest rates on loans to firms amounting to less than €1 million continued their downward trend of recent years, with a decline of approximately 34 bp, while for larger loans, the interest rates remained slightly above 1.5% (see Chart 2.3.A). In the case of households, no significant changes were observed in the interest rates on loans for house

CREDIT TO THE RESIDENT PRIVATE SECTOR
Business in Spain, ID

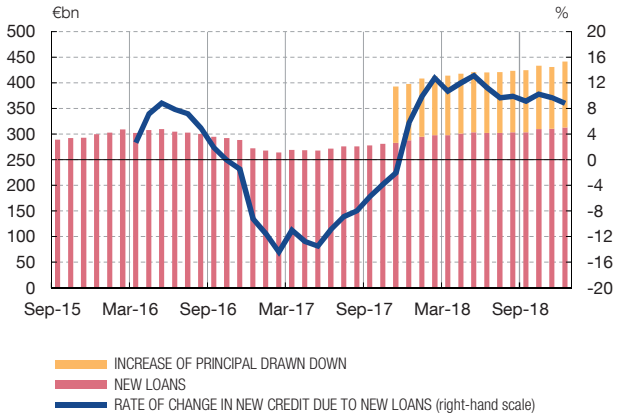
CHART 2.1

Total credit continued to decrease to €1.15 trillion in December 2018 (-3.9% compared with December 2017). New loans in the twelve months of 2018 grew by 8.8% compared with the previous year, total new credit (new loans plus an increase in the principal drawn down) reached €441billion, after this aggregate grew by 11% in the last year.

A CREDIT VOLUME AND YEAR-ON-YEAR RATE OF CHANGE



B NEW CREDIT VOLUME IN LAST 12 MONTHS AND YEAR-ON-YEAR RATE OF CHANGE



SOURCE: Banco de España.

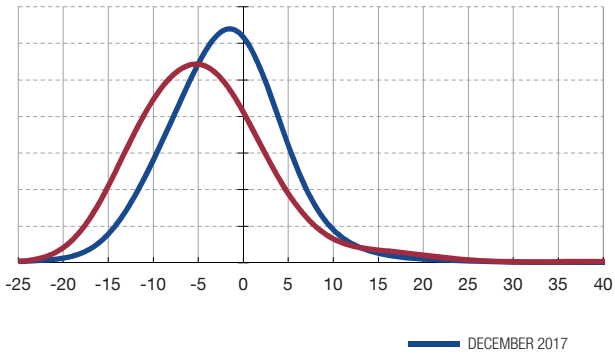
a Before 2017 information was not available on the increase in the principal drawn down in existing loans. Consequently, the first data for this series, accumulated over twelve months, is represented in December each year. The rate of change shown only refers to new loans.

DISTRIBUTION BY INSTITUTION OF THE CHANGE IN CREDIT TO THE RESIDENT PRIVATE SECTOR
Business in Spain, ID. Deposit institutions

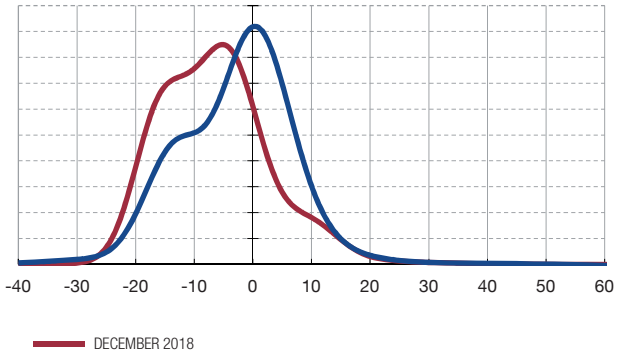
CHART 2.2

Credit to the resident private sector declined across institutions, both in terms of total credit and that extended to non-financial corporations. This is observed in the shift to the left in both distributions.

A DISTRIBUTION OF THE YEAR-ON-YEAR RATE OF CHANGE IN TOTAL CREDIT (a)



B DISTRIBUTION OF THE YEAR-ON-YEAR RATE OF CHANGE IN CREDIT TO NON-FINANCIAL CORPORATIONS (a)



SOURCE: Banco de España.

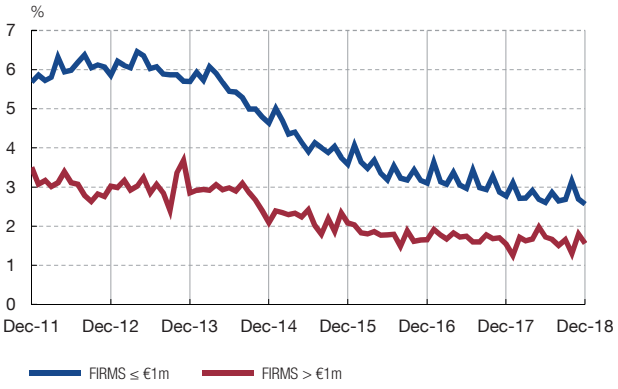
a The graph shows the density function (or frequency distribution) of the year-on-year rate of change in credit for Spanish deposit institutions, weighted by the credit corresponding to each institution. This density function is approximated through a kernel estimator which allows a non-parametric estimate of the density function, yielding a continuous and smoothed graphical representation of that function.

INTEREST RATES ON NEW LOANS (a)
Business in Spain, ID

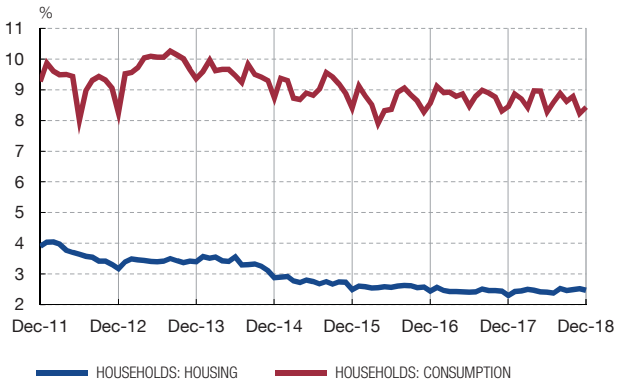
CHART 2.3

Interest rates on new loans remained stable during 2018. The spread on new business with large and small firms stood at approximately 1 pp in December 2018, considerably lower than the 3 pp recorded in 2013. The rate for new consumer loans to households held at above 8%, with a spread of approximately 6 pp over loans for house purchase.

A NEW LOAN INTEREST RATES (APR) - FIRMS



B NEW LOAN INTEREST RATES (APR) - HOUSEHOLDS



SOURCE: Banco de España.

a The new loans of a period are defined as all the first-time loans arranged with customers and all the contracts existing in earlier periods whose amount, interest rate, maturity or other significant financial conditions in relation to interest rates have been renegotiated with customers in the month in question.

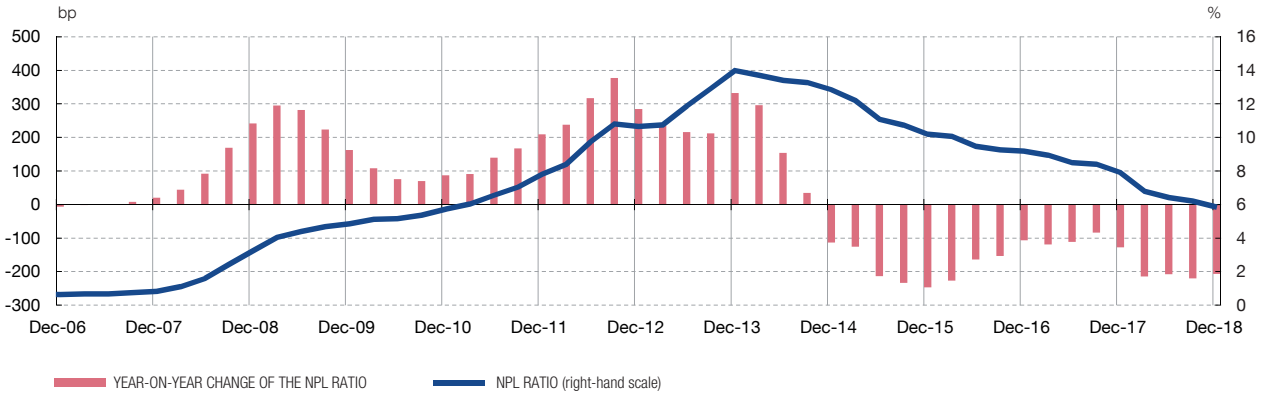
purchase or consumption (see Chart 2.3.B). Analysis of new loan applications by non-financial corporations in 2018 reveals that the number has declined somewhat, but that the approval rate has increased slightly, by as much as 1 pp, compared with the approval rate of 33% observed at end-2017.

Over the past year forborne loans decreased at the same rate as in 2017. The volume of forborne loans stood at €69.5 billion in December 2018, down 21% year-on-year. This was largely due to the 24.2% decrease in the volume of forborne loans of non-financial corporations.

NPL RATIO. RESIDENT PRIVATE SECTOR
Business in Spain, ID. Deposit institutions

CHART 2.4

The NPL ratio of the resident private sector continued the decline observed in recent years and reached 5.8% in December 2018, down by more than 2 pp on the same month of the previous year.



SOURCE: Banco de España.

In December 2018, the NPL ratio of the resident private sector stood at 5.8%, quickening the pace of decline of recent years. This ratio is the lowest observed since December 2010, following a decline of 207 bp in the past year and of 814 bp since December 2013, when the highest NPL ratio of the whole series was recorded (see Chart 2.4). The fall in the NPL ratio was the result of the sharp decline observed in non-performing assets in recent years. In particular, since December 2013, non-performing assets have decreased by more than €122 billion, which accounts for 64.5% of the total. In the past year, they have declined by €27.5 billion (-29.1%). As mentioned above, the decrease was largely due to the sale by some institutions of asset portfolios linked to construction and real estate activities. These declines were related to some extent to the intense pressure exerted by supervisors in recent years.

Over the past year, new NPLs decreased, NPLs written off remained stable and NPL recoveries and sales increased notably. Chart 2.5 shows a breakdown of NPL movements. New NPLs accounted for 27.3% of the initial volume of NPLs in 2018. Write-offs remained at 13.6% of total NPLs at the beginning of the period, although it should not be overlooked that, in absolute terms, they also fell significantly. Lastly, recoveries, which include foreclosed assets and NPLs sold to third parties, rose notably in absolute terms, to account for 42.8% of the amount at the beginning of 2018.

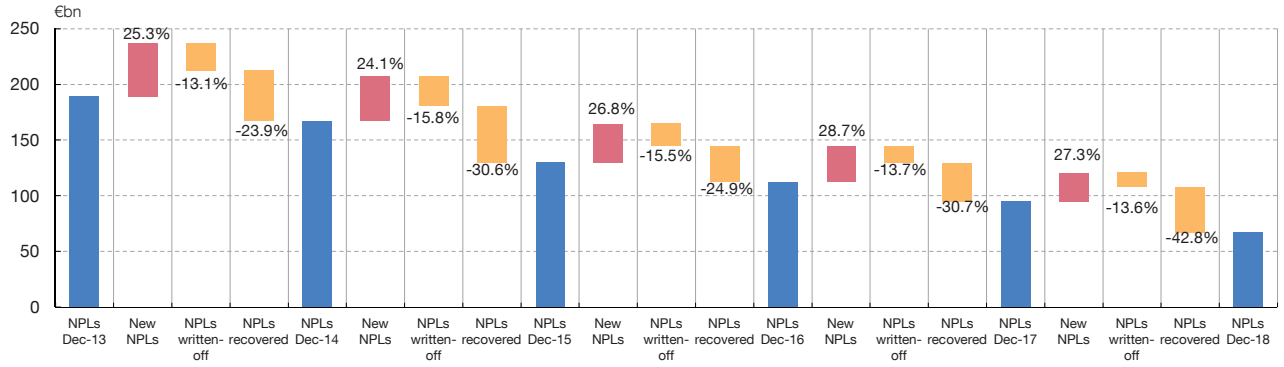
The downward trend in the volume of foreclosed assets was also more pronounced this year, to a large extent due to wholesale portfolio sales. The decline in foreclosed assets, which began in 2014, was appreciably more pronounced in 2018. From December 2017 to December 2018, the volume of these assets decreased by more than €20 billion, representing a year-on-year decline of more than 30% (see Chart 2.6.A).[1] In 2019, confirmation of the announced portfolio sales will further reduce the volume of foreclosed assets. By type, most foreclosed assets relate to construction and real estate development (see Chart 2.6.B), followed by assets stemming from lending to households for house purchase (more than 26%).

1 Wholesale sales have been conducted, in most cases, through a joint venture set up between the selling bank and the buyer, with the joint venture as the recipient of the real estate assets subject to the transaction. The selling bank keeps a minority interest in the joint venture's capital. The impact of foreclosed real estate assets on the selling bank's balance sheet is significantly reduced as only the value of the holding in the joint venture is considered, instead of the whole value of the foreclosed assets.

FLOW OF RESIDENT PRIVATE SECTOR NPLs (a)
Business in Spain, ID

CHART 2.5

With respect to the previous year, in 2018 new NPLs decreased, NPLs written-off remained stable and NPLs recovered, which include those sold to third parties, increased notably. As a result, the total volume of NPLs decreased by €27.5 billion.



SOURCE: Banco de España.

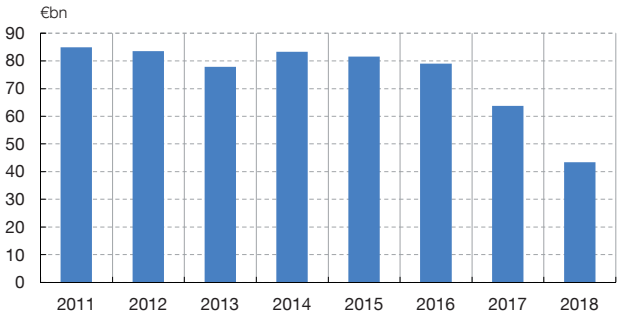
a Shown beside each bar is the percentage each item represents of the total NPLs at the beginning of the period. NPLs recovered include non-performing loans that become performing again, foreclosed assets and NPLs sold to third parties.

FORECLOSED ASSETS

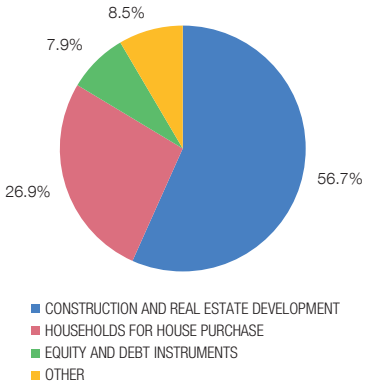
CHART 2.6

In 2018 the downward trend in foreclosed assets, which began in 2014, became more pronounced. Foreclosed assets have decreased by more than €20 billion with respect to December 2017, representing a year-on-year fall of more than 30%.

A FORECLOSED ASSETS



B BREAKDOWN OF FORECLOSED ASSETS. DECEMBER 2018



SOURCE: Banco de España.

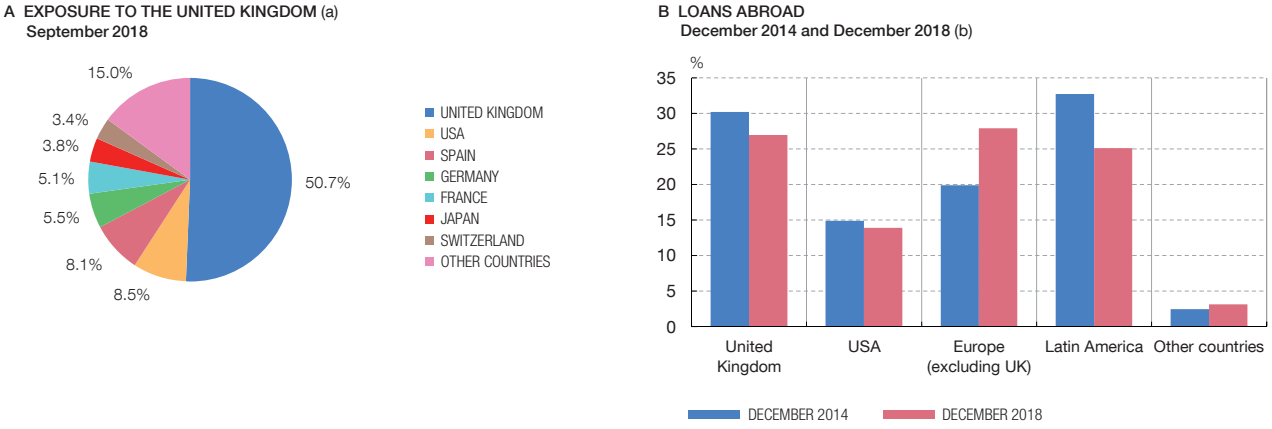
In short, the credit quality of business in Spain has continued to improve, made possible by an accommodative monetary policy and driven by favourable macroeconomic conditions and supervisory pressure. In this regard, the risks affecting the potential growth of the Spanish economy identified in this FSR are factors that will significantly influence the continuation of this positive development.

The consolidated assets of Spanish deposit institutions stood at €3,550 billion in 2018, a year-on-year increase of 0.5% (Annex 1). This slight increase in consolidated assets was the result of the performance of business abroad, where financial assets (mainly loans) rose by 2.8% year-on-year and, to a lesser extent, of business in Spain, where financial assets grew by 0.3%. The greater geographical diversification led to financial assets abroad accounting for 48% of consolidated financial assets in December 2018.

EXPOSURE TO THE UNITED KINGDOM AND LOANS ABROAD
Consolidated data

CHART 2.7

The exposure of foreign banks to the United Kingdom in September 2018 is similar to that of UK banks. The United States (8.5%) and Spain (8.1%) have the highest exposure among foreign banks to the United Kingdom which concentrates more than 25% of the loans abroad of Spanish deposit institutions. Particularly noteworthy in the period 2014-2018 is the growth in loans to Europe (excluding the United Kingdom) and the decrease in the weight of loans to Latin America.



SOURCES: BIS and Banco de España.

a Panel A shows the outstanding balance of loans based on the direct counterparty according to the consolidated banking statistics (CBS) of the BIS.
b Panel B shows the relative weight at each date of the loans in each geographical area as a percentage of total loans outside Spain.

Spanish and US banks have the highest exposure to the United Kingdom and may therefore be more affected by the uncertainty surrounding Brexit (see Chart 2.7.A). Spain is the European country with the highest exposure to the United Kingdom, followed by Germany and France. However, the exposure of Spanish banks to the United Kingdom arises from the activity of subsidiaries with financial autonomy and a retail-oriented business model. This means that the main risk of a disorderly Brexit for Spanish banks is the potential deterioration of the British economy, although this risk has recently eased as a result of the agreement reached with the European Council to delay Brexit until 31 October 2019. The activity abroad of Spanish banks is mainly concentrated in Europe and Latin America and, to a lesser extent, in the United States and Turkey. Particularly noteworthy in the period 2014-2018 is the growth in loans to the rest of Europe (excluding exposure to the United Kingdom), from 19.8% in December 2014 to 27.9% in December 2018, contrasting with the decrease in loans to Latin America, which fell by 7.6 pp to 25.1% in December 2018 (see Chart 2.7.B).

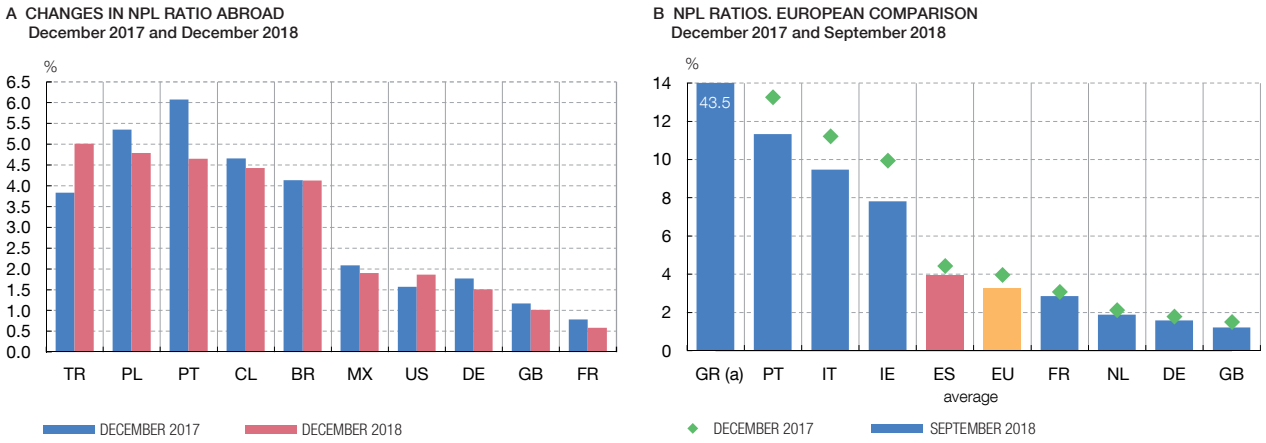
Consolidated non-performing assets, including loans and debt securities, decreased by 14.4% year-on-year (see Annex 1). The decrease in the volume of consolidated non-performing assets pushed the total non-performing assets ratio down to 3.2 %, a decrease of 61 bp with respect to that recorded in December 2017 (3.8 %). In the case of loans abroad, this decrease was across the board, except in Turkey (+1.2 pp, to 5%) and the United States (+0.3 pp, to 1.9%). The largest decreases were observed in Portugal (–1.5 pp to 4.6%) (see Chart 2.8.A).

The non-performing loans ratio of Spanish banks is slightly higher than the European average. According to the data published by the European Central Bank in its consolidated banking statistics, over the past year, Spanish banks reduced their NPL ratio by 0.5 pp, to stand at 3.9% in September 2018 (the latest available data), compared with 3.3% in Europe. Ireland, Italy and Portugal are the countries which have reduced their NPL ratio

NPL RATIO
Consolidated data

CHART 2.8

The NPL ratio abroad decreased in 2018 in the main countries where Spanish deposit institutions are present, except for in Turkey and the United States. The NPL ratio stands between 5% in Turkey and 0.6% in France. In Europe the NPL ratio also continued to fall and reached 3.3% in September 2018.



SOURCES: Banco de España and ECB.

a The NPL ratio in Greece is 43.5% (45% in December 2017).

the most, by about 2 pp (see Chart 2.8.B), although they remain significantly above the European average.

Liquidity and financing conditions

The liquidity coverage ratio (LCR) measures the short-term resilience of Spanish deposit institutions faced with withdrawals of funds. Specifically, the LCR compares the stock of high-quality liquid assets (HQLA) that may be easily and quickly converted into cash (liquidity), with the net outflows of funds that institutions would have to address in an adverse scenario (set by the regulator) lasting 30 days. The regulatorily required level for this ratio must be above 100%, that is, institutions must always have sufficient liquid assets to cope with outflows of funding under a stress scenario of 30 days.

In December 2018, the aggregate LCR stood at 170%, well above the regulatory minimum. Chart 2.9.A shows how the LCR has generally trended upwards since 2016, to stand at 170%, driven by the build-up of liquid assets, since the denominator of the ratio remained relatively stable. By institution, Chart 2.9.B shows the slight shift to the right of the distribution between 2017 and 2018, evidencing that a larger number of institutions had a higher level of this ratio in December 2018.

The LCR of Spanish institutions was slightly higher than the European average in December 2018. In particular, based on the data published quarterly by the European Banking Authority in its risk dashboard,[2] the ratio in Spain was 162.3%, compared with the European average of 152% (see Chart 2.10), lower than the ratio observed in the United Kingdom, but higher than those of the rest of the large EU economies.

Monetary policy developments in the euro area affect the liquidity and financing conditions of the wholesale funding market. The expansionary monetary policy applied

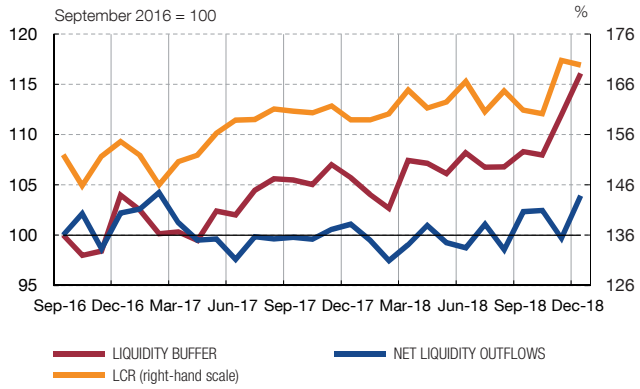
2 See http://www.eba.europa.eu/risk-analysis-and-data/risk-dashboard

LIQUIDITY COVERAGE RATIO
Consolidated data

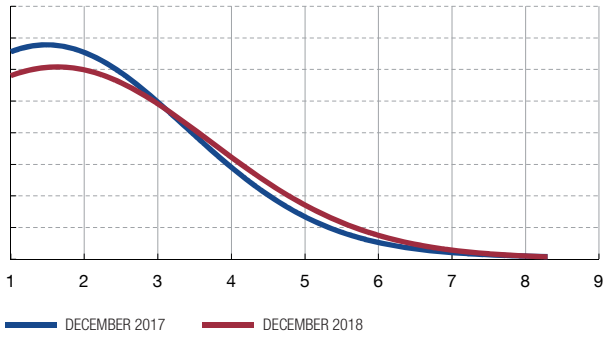
CHART 2.9

The LCR of Spanish deposit institutions has risen since it began to be measured in September 2016, driven by the build-up of liquid assets. The distribution across institutions has varied slightly in the last year towards a higher level of the ratio.

A AGGREGATE LCR
September 2016-December 2018 (a)



B DISTRIBUTION OF LCR BASED ON NET LIQUIDITY OUTFLOWS (b)



SOURCE: Banco de España.

a The aggregate LCR at each date is calculated as the sum of the HQLAs of all institutions divided by the sum of net liquidity outflows of all institutions.
b The panel shows the density function (or frequency distribution) of the LCR for Spanish deposit institutions, weighted by net cash outflows corresponding to each institution. This density function is approximated through a kernel estimator which allows a non-parametric estimate of the density function, yielding a continuous and smoothed graphical representation of that function.

by the ECB since June 2014 has led to an increase in the Eurosystem's balance sheet (from €2,000 billion to €4,700 billion,[3] see Chart 2.11.A), mainly due to its purchase programme, which recently underwent changes. From January 2019, the ECB will only reinvest the principal payments from maturing securities. In March 2019, the ECB announced that it would continue to make funding available to credit institutions through the Eurosystem and that it would maintain the current benchmark rates throughout 2019.

Funding provided by the Eurosystem to the Spanish banking sector in recent years has been very high. The Eurosystem provides liquidity through its asset purchase programmes and its refinancing operations, amounting to €2,635 billion and €728 billion, respectively, in April 2019. Almost all of the refinancing granted by the Eurosystem to date (€719 billion)[4] has consisted of four targeted longer-term refinancing operations known as TLTRO-II, which have provided banks with stable, long-term funding with very favourable conditions. Spanish banks have obtained funding amounting to nearly €168 billion,[5] which accounts for 23% of the total liquidity received by all Eurosystem banks (see Chart 2.11.B) and slightly more than 15% of Spain's GDP. Spanish banks, together with Italian banks, are those that have relied the most on these TLTRO-II operations to obtain long-term refinancing.

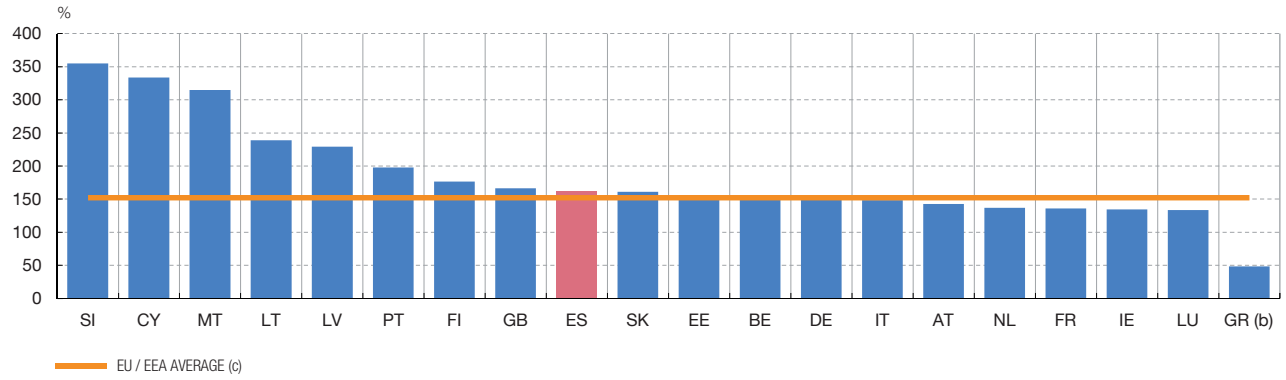
According to the measures announced by the Governing Council of the ECB in March 2019, banks will be able to obtain abundant funding through the Eurosystem for an extended period of time. Specifically, the ECB confirmed that the regular one-week and three-month lending operations will continue to be executed at a fixed rate with full allotment of banks' requests for liquidity, only subject to having sufficient collateral, at least until

3 The surplus liquidity in the system increased from €200 billion to €1,851 billion in the same period. Of this amount, €1,265 billion relates to excess reserves and €586 billion to the deposit facility.
4 The remainder, €9 billion, related to the Eurosystem's main refinancing operations.
5 Of this amount, €115.6 billion were granted in June 2016, €41.5 billion in March 2017, and the rest (€10 billion) in September and December 2017.

LIQUIDITY COVERAGE RATIO. EUROPEAN COMPARISON (a)
SSM COUNTRIES AND UNITED KINGDOM. December 2018

CHART 2.10

The liquidity coverage ratio (LCR) at the European level stood at 152% as at December 2018, far above the required minimum threshold of 100%. The European countries as a whole posted a ratio of over 100%, with the exception of Greece.



SOURCE: EBA.

a The data refer to a sample of 149 institutions, and the LCR is calculated as the weighted average of the ratios of each country's institutions.
b Greek banks monetised their liquid assets to cover their neck liquidity needs. That placed the LCR below 100% in the period of tension that has prevailed to date, in accordance with the provisions of Art. 4 (3) of Commission Delegated Regulation (EU) 2015/61 of 10 October 2014.
c EBA data include Iceland.

March 2021.[6] Moreover, it decided to launch a new series of quarterly operations, starting in September 2019 and ending in March 2021 (TLTRO-III). At the date of this report going to press, the ECB has announced that these operations will have a maturity of two years, will be conducted at a variable rate indexed to the interest rate on the main refinancing operations (currently 0%), and that further details on these operations will be communicated in due course.

Activity on the euro area unsecured interbank money markets remains very low. The EONIA trading volume is very low and has continued to decline in recent months (see Chart 2.11.C). The fall in the volumes of activity of the Spanish and European interbank markets are explained by: i) the conditions of surplus liquidity in the system, which means that banks do not need have recourse to interbank market funds since their liquidity requirements are already covered; ii) the new regulatory framework, which favours secured lending transactions[7] and iii) banks' aversion to counterparty risk, which emerged during the financial crisis and which has led to structural changes with banks opting for transactions backed by collateral instead of unsecured ones.

Most of the activity in unsecured money markets is conducted by institutions that do not have access to the ECB's deposit facility, which helps to explain the differences between the EONIA and €STR interest rates. These institutions include European non-bank financial corporations (asset management companies, pension funds, insurance companies) and non-EU resident banks. These institutions have received abundant liquidity as holders of substantial asset volumes now absorbed by the ECB in the framework of its "asset purchase programme". The surplus liquidity is deposited in European banks which, in turn, place it in the deposit facility. The deposits of banks that do not have access to the deposit facility in European banks are made at lower rate than that of the deposit facility itself, which explains why the €STR rate, also applied to this type of transactions, is below the deposit facility rate. In contrast, the EONIA, only applied to transactions between EU

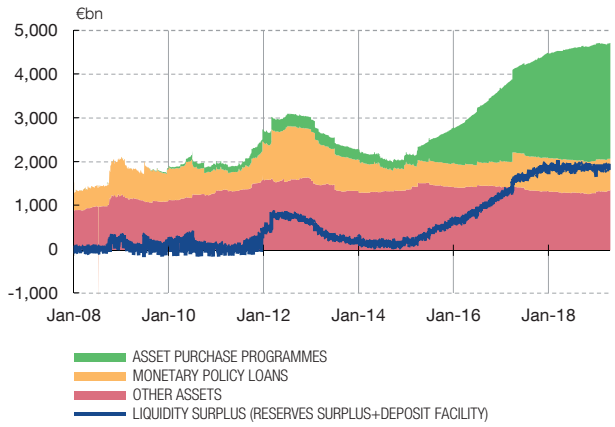
6 Specifically, until the end of the reserve maintenance period starting in March 2021.
7 Specifically, solvency regulations reduce capital requirements for collateralised exposures.

WHOLESALE FUNDING

CHART 2.11

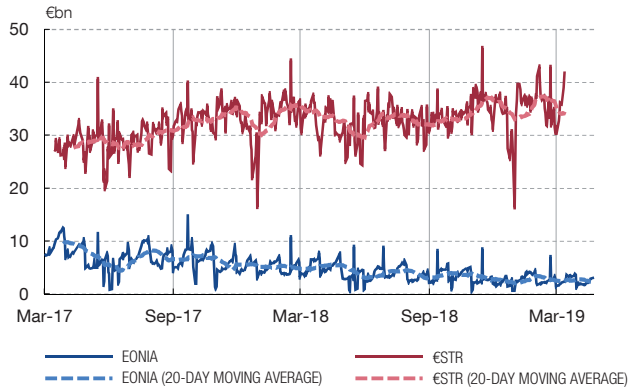
Activity on the euro area unsecured interbank money markets remains very low, while the funding provided by the Eurosystem has been very high in recent years. Spanish institutions reduced their aggregate issuance activity in 2018, compared with the previous year.

A EUROSYSTEM BALANCE SHEET AND LIQUIDITY SURPLUS

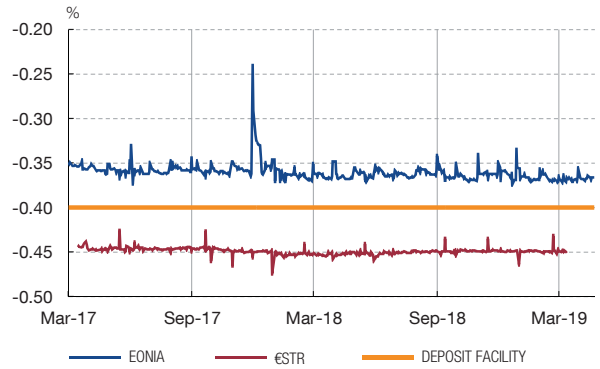


B OUTSTANDING AMOUNT PROVIDED THROUGH EUROSYSTEM TENDERS

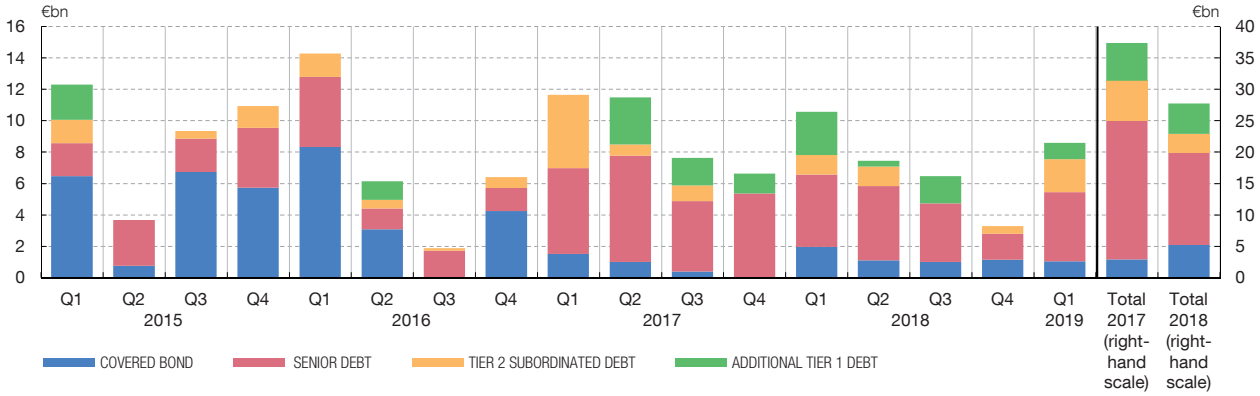
C TURNOVER IN EU MONEY MARKETS



D EU MONEY MARKET RATES



E MAIN ISSUES OF SPANISH INSTITUTIONS IN MEDIUM- AND LONG-TERM WHOLESALE MARKETS (a)



SOURCES: Bloomberg, Dealogic, Eikon, Thomson Reuters and Banco de España.

a Includes covered bonds, senior debt, subordinated debt eligible as tier 2 capital and debt eligible as additional tier 1 capital. Retained issues are not included.

banks, is similar to the deposit facility rate, which acts as a floor given the liquidity surplus (see Chart 2.11.D and Box 2.1 on the new benchmark indices in Europe).

Activity in secured markets (repos), which represents the bulk of the total trading volume in European money markets, has increased in the last two years. Institutions

Benchmark rates are essential for determining the price of numerous financial instruments and financial contracts. Of these benchmarks, EONIA is particularly significant in derivatives contracts and the overnight indexed swap (OIS)[1] market as well as for the transmission of monetary policy.

EONIA is calculated as a weighted average rate of all overnight unsecured lending transactions in the interbank market reported voluntarily by 28 panel banks. The decrease in activity on its underlying markets and the reduction in the number of banks participating in the panels have affected adversely the integrity and robustness of this index. In fact, it does not meet the requirements of the new European Benchmarks Regulation[2] (BMR) and, consequently, needs to be reformed by 1 January 2020, the deadline set for indices used as benchmarks to comply with this Regulation.

EMMI,[3] the administrator of EONIA, initially sought to align this index with the BMR requirements. However, in 2017 it announced that it would not continue the reform of EONIA and undertook to provide this critical benchmark[4] until the end of the BMR transition period. It stated that it could not guarantee that EONIA would comply with the BMR, in which case, it would not be able to use it as a benchmark as from 2020. Accordingly, a proposal was made to EMMI to modify the methodology used to calculate EONIA to facilitate the transition to the new risk-free rate.

Central banks are developing risk-free overnight rates which may complement private-sector indices, given their key role for monetary policy transmission. Against this background, the ECB is the administrator of an index called €STR, which it has developed.

€STR is a representative benchmark of the euro area reflecting the borrowing costs for euro area banks of raising funds in the wholesale market on overnight deposits on an arm's length basis. The rate will be published daily based on individual deposit transactions in the European money market which 50 agents must report to the ECB within the arrangements of the money market statistical reporting (MMSR) regulation.[5] The underlying market is that of banks' deposits from financial institutions and not only those from other banks. €STR and EONIA are based on unsecured overnight transactions, but there are important economic differences between them since EONIA includes the rate at which banks lend funds to each other on the interbank market whereas €STR includes the rate banks pay for deposits from other counterparties which are not necessarily banks. These differences explain the spread existing between the two rates. €STR rates are between 7 bp and 9 bp lower than EONIA rates, as can be seen in Chart 2.11.D.

In September 2018 the working group on euro risk-free rates[6] recommended that €STR be used as the new euro area risk-free rate to replace EONIA. Nevertheless, EONIA will continue to exist and may be used in contracts in force during a limited period of time to facilitate a smooth transition to €STR. On 14 March 2019 the ECB announced that it will begin to publish €STR on 2 October 2019, three months before the deadline for replacing EONIA, to reflect the previous day's operations.

With the €STR identified as the recommended benchmark, it is important that banks work to ensure an orderly transition from EONIA to €STR and to resolve the risks and problems which may arise with the contracts and instruments currently using EONIA as a benchmark (legacy assets). Accordingly, the working group recommended that EMMI, as its administrator, modify the current methodology for calculating EONIA to facilitate the transition to the new risk-free rate to give market participants sufficient time to transition to €STR.[7] Thus, for a limited period of time until end-2021, EONIA will be calculated by applying a fixed spread to €STR,[8] to be published by the ECB instead of being based on the data provided by a panel of credit institutions.

The ECB also stated on 14 March that it supports private-sector efforts for a successful transition from EONIA and will provide the calculation of the spread between EONIA and €STR on a specific date before publication of €STR begins. Thus, the EMMI is projected to begin publishing EONIA under the recalibrated methodology based on €STR on 2 October at the same time as the ECB publishes €STR. Parallel publication is expected to last until end-2021 and thereafter only €STR will be published.

Finally, the working group also recommended that market participants gradually replace EONIA by €STR and that €STR be used in all new products and contracts signed as from January 2020.

1 It is estimated that the outstanding volume of unsecured money market instruments using EONIA as a reference rate stood at around €450 trillion at end-2017. Use of the OIS market is estimated to exceed €5.2 trillion.
2 Regulation (EU) 2016/1011 of the European Parliament and of the Council of 8 June 2016 on indices used as benchmarks. The Regulation, implemented due to cases of benchmark manipulation, seeks to improve the method for calculating benchmarks. It does so by requiring that the calculation be based on real transactions and that governance and controls in the provision of benchmarks be strengthened, thus avoiding conflicts of interest.
3 The European Money Market Institute (EMMI) is a private institution responsible for administering EONIA. It is a non-for-profit association under Belgian law founded in 1999. Its members are national banking associations in EU Member States.
4 EONIA was designated as a critical benchmark in June 2017. EURIBOR and LIBOR are also critical benchmarks which were designated in August 2016 and December 2017, respectively.
5 Regulation (EU) No 1333/2014 of the European Central Bank of 26 November 2014 concerning statistics on the money markets (ECB/2014/48). The main purpose of collecting such statistics is to provide the ECB with comprehensive, detailed and harmonised statistical information on the money markets in the euro area which provide information on the transmission mechanism of monetary policy decisions.
6 It is an industry-led group established in 2018 by the ECB, the Belgian Financial Services and Markets Authority (FSMA), the European Securities and Markets Authority (ESMA) and the European Commission and comprises 21 large European banks, including BBVA and Santander, and five industry associations.
7 EMMI was also requested to engage with the relevant authorities to ensure that EONIA, revised in accordance with the new methodology, complies with the BMR.
8 On 14 March 2019 the working group made a recommendation to EMMI for a specific formula to calculate this spread between €STR and EONIA which should be based on public data.

are using these markets to manage their collateral needs, rather than to cover their cash flow or liquidity needs, as occurred in the past. Institutions have a greater need for high-quality liquid assets (HQLA), in particular, sovereign bonds, against a background of uncertainty as to their availability, owing to a combination of factors. In this context, sovereign bonds with investment-grade rating are the type of asset most used in the repo market, most of them cleared by central counterparties (CCPs).

With regard to longer-term funding, Spanish banks reduced their aggregate issuance activity in 2018 compared with the previous year. By type of debt instrument issued, there was a decrease in the amount of issues of senior and subordinated debt, both that eligible as additional Tier 1 capital and that eligible as Tier 2 capital. In contrast, the amount of covered bonds issued in 2018 was higher than in the previous year (see Chart 2.11.E), although it should be noted that 2017 had seen a significant decrease compared with the amounts issued in 2015 and 2016, when issues by Spanish banks were concentrated in these secured debt instruments.

However, the need to continue issuing bonds in the near future will be boosted, owing to the paradigm change in the resolution of banks, which has led to the establishment of minimum requirements for own funds and other eligible liabilities. The Single Resolution Board (SRB) has set binding targets for significant European institutions in relation to the minimum requirement for own funds and eligible liabilities (MREL). To meet the MREL targets, institutions need to issue different debt instruments with different degrees of subordination and associated costs that are higher than those of senior debt or secured instruments such as covered bonds. The subordinated debt instruments that are eligible as MREL are complex products that should not be distributed among retail investors, but should be reserved for wholesale investors with the ability to analyse the risk involved and profitability offered by the product. It should be borne in mind that, in the event of the bank's resolution, these instruments may ultimately absorb losses totally or partially, with the subsequent impact on the financial position of the holder. In such circumstances, the presence of retailers may become a hindrance to the resolvability of banks. The issuance of eligible liabilities for MREL purposes is far more of a challenge for small and medium-sized banks, with less issuing experience and a retail-oriented funding model.

The seniority of the claim relating to different debt instruments and the yield which banks must offer to attract this type of funding on the markets are inversely related. Specifically, an analysis of the issues of four debt instruments (covered bonds, senior debt, subordinated debt eligible as Tier 2 capital and subordinated debt eligible as additional Tier 1 capital, listed by seniority) by banks in the five main European countries (Spain, France, Germany, Italy and the United Kingdom) in the last three years (from 2016 to 2018) shows that the cost of covered bond and senior debt issues differs substantially from that of subordinated debt issues (see Chart 2.12.A).[8] Regarding subordinated debt, the cost of debt eligible as additional Tier 1 capital is appreciably higher than that of subordinated debt eligible as Tier 2 capital.

Recent years have seen a decrease in the cost of subordinated debt and a slight increase in that of European covered bonds and senior debt. A comparison of issuance costs in the main European countries in the last three years (see Chart 2.12.B) reveals

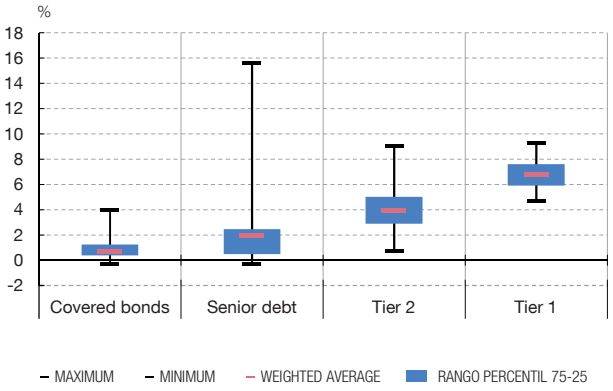
8 The dispersion in the cost of senior debt is higher, since it is by far the most frequently issued type of debt, and therefore includes banks with widely varying types of business, size and financial position. In part, this dispersion may respond to the fact that non-preferred senior debt cannot be separated from other debt.

COST IN EUROPE OF DEBT INSTRUMENT ISSUANCE

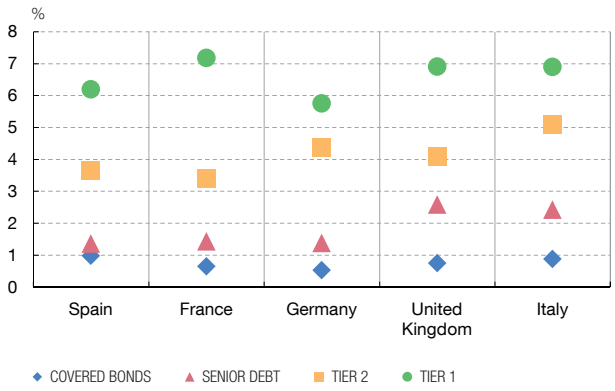
CHART 2.12

There is a clear relationship between the cost of issues and the seniority of the claim relating to debt instruments: the closer the debt is to the institution's capital, the greater its cost. Further, the closer the debt instrument is in its characteristics to a capital instrument, the greater the reduction in the costs associated with a higher CET1 ratio of the issuer.

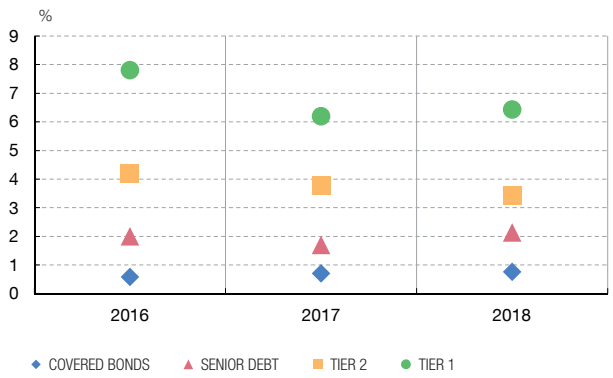
A COST OF DEBT INSTRUMENTS ISSUANCE 2016-2018 (a)



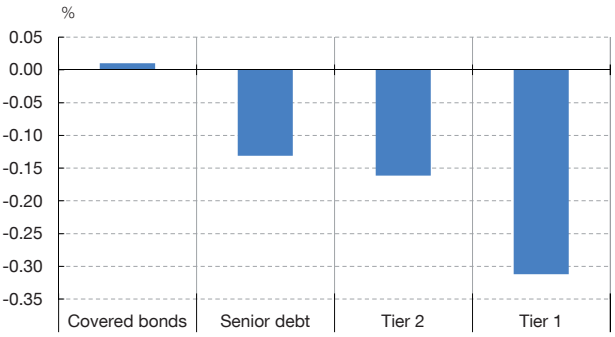
B AVERAGE COST OF DEBT INSTRUMENTS ISSUANCE: 2016-2018, BY COUNTRY



C AVERAGE COST OF DEBT INSTRUMENTS ISSUANCE PER YEAR



D CET1 EFFECT ON THE COST OF DEBT INSTRUMENTS (b)



SOURCES: Dealogic and SNL.

a The chart shows the maximum cost, the minimum cost, the range between the 75th percentile and the 25th percentile, and the weighted (by the amount of the issues) average of the cost for Spanish, Italian, French, German and British banks from 2016 to 2018 of issues of covered bonds, senior debt, subordinated debt eligible as tier 2 capital and debt eligible as additional tier 1 capital. The minimum cost of issues of covered bonds and senior debt is below zero since in some cases the coupon on the issue is index-linked (e.g. to the three-month EURIBOR), plus a spread, and the value of the index at the time of issuance is less than the spread applied.

b For each type of instrument, the chart shows the coefficient relating to the CET1 ratio in a multivariate regression with the issuance cost as a dependent variable, and other characteristics of the issue (maturity, volume), of the issuer (total assets, solvency, nationality), and market conditions (index of the European banking sector, interest rate on government debt of the country of residence of the issuer with the maturity closest to that of the issue) as explanatory variables. For example, the coefficient of -0.3 for Tier 1 indicates that a 1 pp increase in the CET1 ratio of an issuing bank is associated, all things being equal, with a -0.3 pp reduction in the issuance costs of this instrument. The estimation is made on issues by banks from Germany, Spain, France, Italy and the United Kingdom for the 2016-2018 period.

no major differences between countries and, in general, the average yields offered for each type of instrument fall within similar bands. However, some decline in the trend can be observed in the yields offered for subordinated debt and a slightly rising trend for European covered bonds and senior debt (see Chart 2.12.C). Consequently, the differential in the cost of subordinated debt and that of senior debt and covered bonds has narrowed in the last three years (by around 1.5 pp for subordinated debt eligible as additional Tier 1 capital and by 1 pp for debt eligible as Tier 2 capital).

The higher the level of the CET1 ratio, the lower the cost of issuance, with this effect increasing the closer the debt instrument is to a capital instrument. An empirical analysis conducted using the data on the issuance of debt instruments by European banks

in 2016-2018,[9] to attempt to identify the determinants of the cost of the different debt instruments, revealed that the level of the CET1 ratio (the highest-quality capital) has a statistically significant negative effect on the cost of issuing senior and subordinated debt, both that eligible as Tier 1 and Tier 2 capital. Conversely, the CET1 ratio of the issuer does not significantly affect covered bonds, a relatively more homogeneous product secured by the mortgage portfolio (see Chart 2.12.D).[10] Lastly, the analysis of subordinated debt issues shows that the size of banks is also significant, and that those with a higher level of assets have lower issuance costs.

The aforementioned inverse relationship between the CET1 ratio and issuance costs is highly significant for Spanish banks. This is because they will have to issue a significant amount of subordinated debt instruments in the coming years (additional Tier 1, non-preferred senior debt) to meet the MREL requirements imposed on them. The higher their CET1 ratio, the lower the expected cost of the new issues.

No vulnerabilities or significant changes have been identified as regards retail funding, whose volume and composition remained relatively stable, with 0.7% year-on-year growth in deposits at consolidated level.

2.1.2 PROFITABILITY AND SOLVENCY

Profitability

In 2018 the Spanish banking sector recorded consolidated profit attributable to the parent of €19,438 million, 24.8% higher than in 2017. This increase in consolidated profit represented growth of 11 bp in the return on assets (ROA), from 0.44% in 2017 to 0.55% in 2018 (see Annex 2). The return on equity (ROE) rose from 6% at December 2017 to 7.2% at December 2018, which, in principle, improves the resilience of Spanish banks against future shocks. The recovery of profitability contributes to bringing the ROE closer to the levels of cost of equity (COE) estimated for the banking sector, although it is still below the average COE values seen after the economic crisis of 2008.

At consolidated level, both net interest income and net fees and commissions increased compared with the previous year, while gains on financial assets and liabilities decreased. Net interest income increased slightly (1%, see Annex 2) year-on-year in the past year, since interest expenses decreased by more than interest revenue (-3.8% and -0.7%, respectively). The year-on-year increase in net fees and commissions was higher (3.6%), although its lower amount in relation to net interest income results in a growth lower than that of net interest income relative to average total assets (ATA) (see Chart 2.13.A). As has been the case over the last few years, gains on financial assets and liabilities fell once again (by more than 25%). Thus, gross income declined slightly, by 0.7%, in 2018.

In the current low interest rate environment, banks have focused somewhat more on the provision of banking services, with the result that fees and commissions increased.

9 Multivariate regressions were conducted, with the cost of the issue as a dependent variable, and other characteristics relating to the issue (maturity and volume), the issuer (total assets, solvency and nationality), and market conditions (European banking sector index and interest rate on government debt of the country of residence of the issuer with the maturity closest to that of the issue), as explanatory variables. The robustness of the results were analysed by adding other issuer characteristics such as the credit rating, which is more favourable in the case of higher solvency levels and larger issuers. With these specifications, the lower issuance cost associated with a higher level of the CET1 ratio is maintained, either as a direct effect or as a result of an upgraded credit rating.

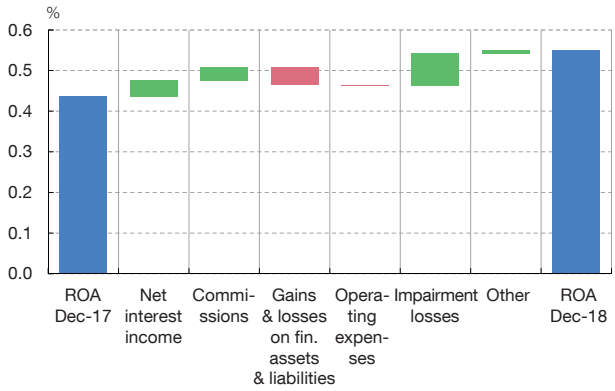
10 These results are based on all issues by banks in the main European countries, most of which were carried out by large banks. These results are not verifiable in the case of smaller banks, given the very limited number of issues.

CONSOLIDATED PROFITABILITY
Deposit institutions

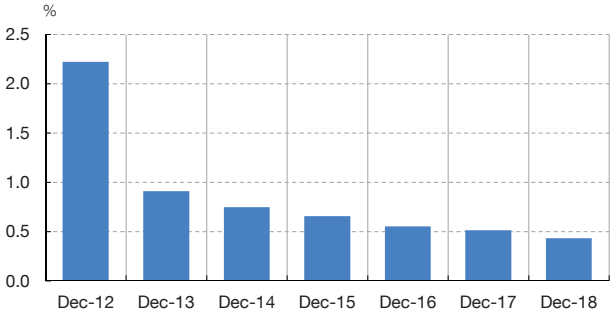
CHART 2.13

Both net interest income and net commissions rose on the previous year, while gains and losses on financial assets and liabilities fell. The main determinant of the improvement in income for the Spanish banking sector is the reduction in impairment losses, which fell by over 16% in 2018.

A BREAKDOWN OF THE CHANGE IN CONSOLIDATED PROFIT ATTRIBUTED TO THE PARENT INSTITUTION IN DECEMBER 2018 WITH RESPECT TO DECEMBER 2017 AS A % OF ATA (a)



B FINANCIAL ASSET IMPAIRMENT LOSSES AS A % of ATA



SOURCE: Banco de España.

a The red (green) colour of the bars indicates a negative (positive) contribution of the corresponding item to the change in consolidated profit in December 2018 with respect to December 2017.

This trend in recent years (downward in net interest income and upward in net fees and commissions) also arose in the activity of credit institutions in Spain, although net interest income has already remained stable in the past year (see Chart 2.14.A). Net fees and commissions continued to grow in 2018, almost 4% year-on-year, resulting in an almost 0.4 pp increase in its weight in gross income (see Chart 2.14.B).

In any event, the main determinant of the improvement in profit for the Spanish banking sector in 2018 was the decrease in impairment losses. In keeping with the pattern of recent years, impairment losses declined in 2018 (see Chart 2.13.B). The decline was substantial, over 16%, and amounted to close to €3 billion. In a setting of stagnant margins, it is the main driver of the improvement in profit for Spanish institutions in 2018. Additionally, the positive change in the contribution of extraordinary operations also boosted profitability.

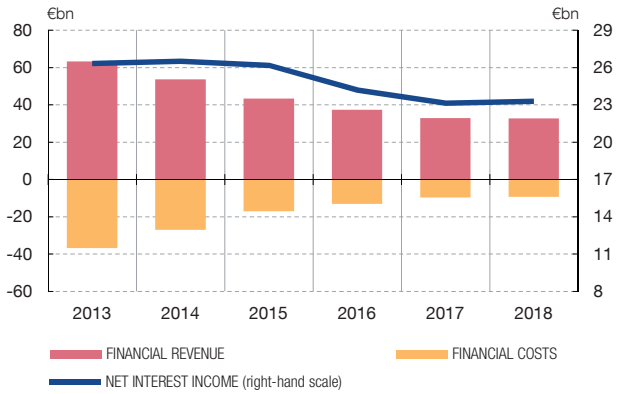
The cost-to-income ratio of Spanish banks has improved since 2016 owing to the increase in gross income and the containment of expenses, whose structure has been relatively stable for Spanish banks since 2015. The slight decline in the level of operating expenses in 2016 and the unfavourable changes in gross income led to a worsening of the aggregate cost-to-income ratio, which rose from 52.7% in 2015 to 55.7% in 2016. From that year, the containment of expenses and the improvement in gross income have allowed the ratio level to recover up to 53.3% in 2018 (see Chart 2.15.A). A breakdown of administrative expenses linked to the activity of Spanish banks in 2015 and 2018 shows some stability, with predominance of staff costs (53%), followed by IT and communications (11.6%), outsourced services and technical reports (8.6%) and depreciation (8.2%). The last three items increase their weight in comparison with the structure in 2015, when they accounted for 10.1%, 7.7% and 7.2%, respectively of total expense (see Chart 2.15.B). This change reflects the digitalisation process and the increased technological component in the activity of these institutions.

NET INTEREST INCOME AND NET COMMISSIONS
Business in Spain, ID

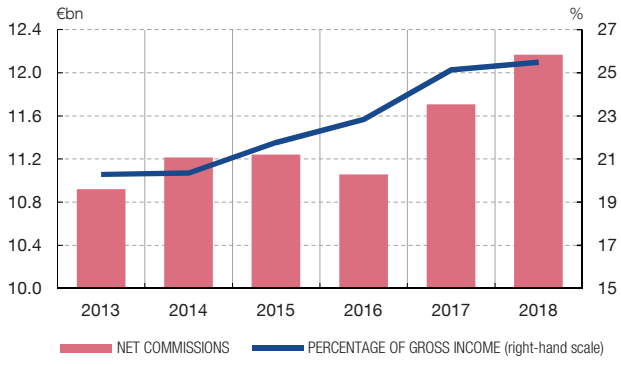
CHART 2.14

While net interest income on activity in Spain fell in recent years, it held stable in 2018. Net commission continued growing, and was up almost 4% last year.

A FINANCIAL REVENUE AND COSTS, AND NET INTEREST INCOME



B NET COMMISSIONS AMOUNTS AND PERCENTAGE OF GROSS INCOME (a)



SOURCE: Banco de España.

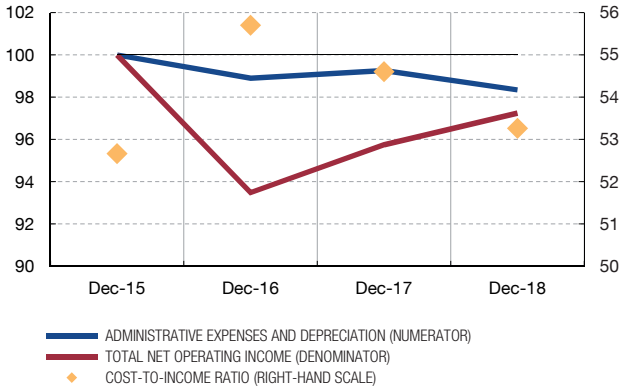
a Gross income is the sum of net financial income (net interest income plus the return from capital instruments) and net commissions, gains and losses on financial assets and liabilities and other operating income (net).

COST-TO-INCOME RATIO AND OPERATING EXPENSES

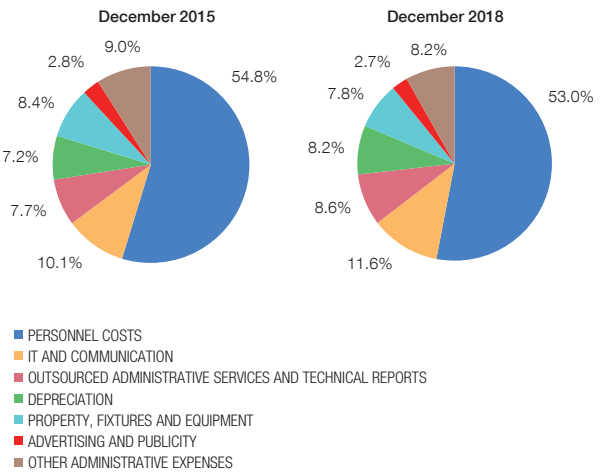
CHART 2.15

The consolidated cost-to-income ratio has trended favourably since 2016, owing both to higher net operating income and to the reduction in administrative expenses and depreciation charges. At the individual level, administrative expenses as at December 2018 where concentrated chiefly in personnel costs, IT and communication, outsourced administrative services and technical reports, and depreciation, with the cost structure relatively stable compared with 2015.

A COST-TO-INCOME RATIO



B BREAKDOWN OF ADMINISTRATIVE EXPENSES AND DEPRECIATION



SOURCE: Banco de España.

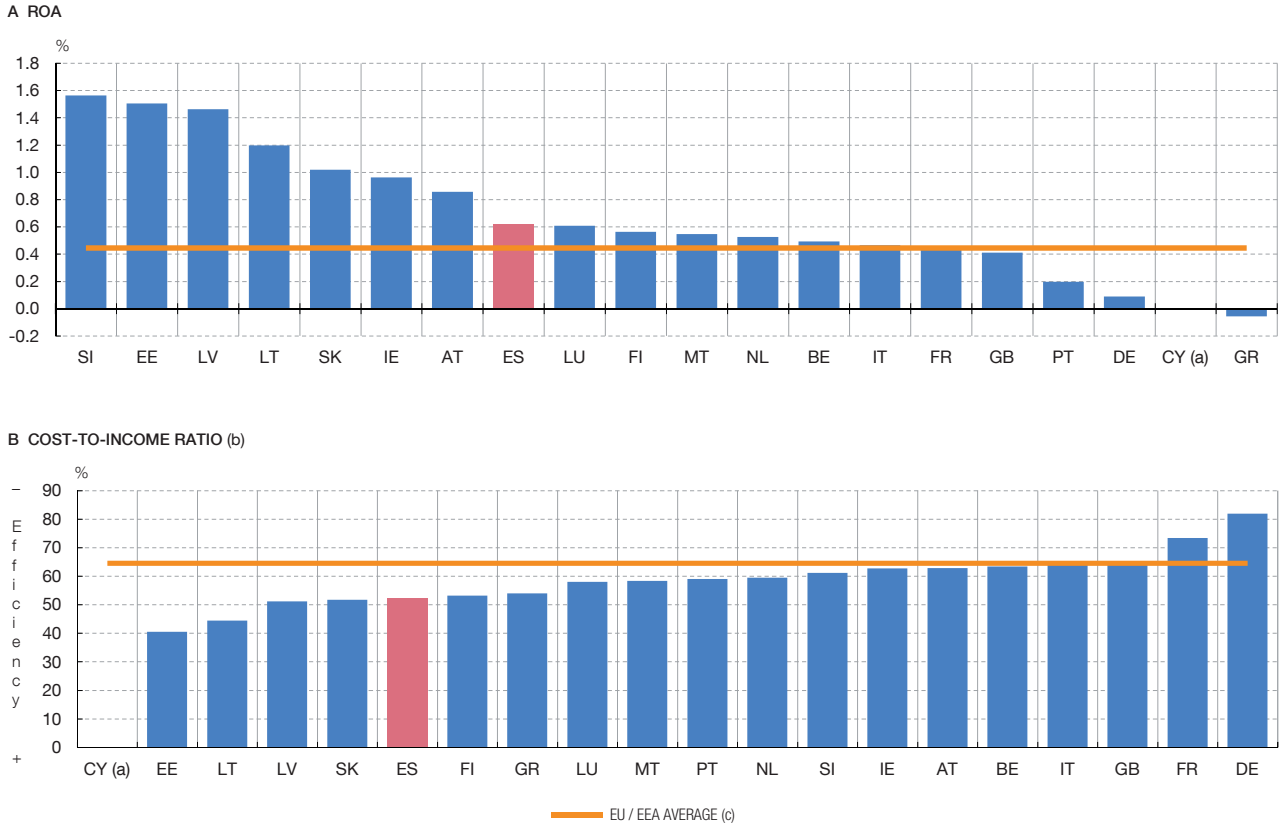
In terms of profitability and efficiency, Spanish institutions stand above the European average. Based on European Banking Authority (EBA) data as at December 2018,[11] the Spanish banking sector is one of the highest ranking in profitability in comparison with the main European countries (see Chart 2.16.A). Similarly, the cost-to-income ratio, i.e. the ratio of operating expenses to gross income, of Spanish institutions is one of the lowest (best) in Europe (see Chart 2.16.B).

11 See http://www.eba.europa.eu/risk-analysis-and-data/risk-dashboard

PROFITABILITY AND EFFICIENCY. EUROPEAN COMPARISON.
SSM COUNTRIES AND UNITED KINGDOM. December 2018

CHART 2.16

In terms of return on assets, Spanish institutions stand above the European average and that of the main European countries. Along these lines, the Spanish banking sector's cost-to-income ratio is among the lowest (best) in Europe.



SOURCE: EBA.

a Data not published by the EBA.
b The cost-to-income ratio is defined as the ratio of operating expenses to gross income.
c EBA data include Iceland.

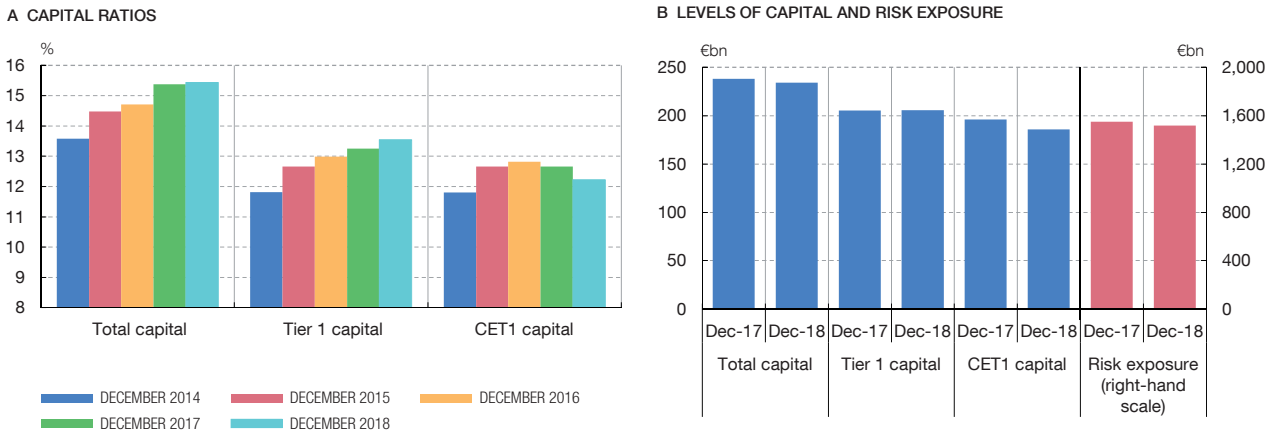
Solvency

The ratio which measures the highest quality capital, Common Equity Tier 1 (CET1) capital, stood at 12.2% in December 2018, decreasing by 43 bp in the past year, largely owing to lower transitional adjustments (see Chart 2.17.A). CET1 capital decreased by around 5% in the past year, largely owing to the fall in transitional adjustments[12] which in previous years reduced the deductions of certain CET1 items (goodwill, deferred tax assets, etc.) and which have been applied gradually up to the full implementation of Basel III. Therefore, Spanish banks did not offset with increases in capital or reserves the erosion of CET1 capital which the process of adjustment to the new regulations entails. Additionally, risk weighted assets (RWAs) also decreased in the past year, although to a lesser extent than CET1 capital (by 2%) (see Chart 2.17.B).

As set forth in the previous FSR, in recent years the CET1 solvency ratio has increased only moderately. In particular, the CET1 capital ratio only increased by 42 bp in the period

12 Transitional adjustments generally defer over time the deductions from own funds set out in Directive 2013/36/EU of 26 June 2013 (CRD IV) and in Regulation (EU) 575/2013 of 26 June 2013 (CRR), which implement Basel III in Europe such that the reduction of CET1 is spread over more years. Broadly speaking, the transitional adjustment was 80% in 2014, 60% in 2015, 40% in 2016, 20% in 2017, and disappears in 2018.

The CET1 ratio declined by 43 bp to 12.2% in December 2018, while the Tier 1 capital and total capital ratios increased last year. Risk-weighted assets declined by 2% last year.



SOURCE: Banco de España.

2014-2018, despite the decrease in the denominator and the recovery of bank profits during the period, coinciding with the Spanish economy's more favourable performance.

By contrast, the regulatory change prompted an increase in the Tier 1 capital and total capital ratios in the past year (to 13.5% and 15.4%, respectively), and the CET1 Fully Loaded capital ratio also increased by 0.1 pp, to 11.8%. The Tier 1 capital ratio increased by 30 bp in the past year, largely reflecting the reduction of transitional adjustments discussed above (since deductions are now applied directly to CET1 and not to additional Tier 1 capital, as was the case while transitional adjustments were in force). The total capital ratio rose slightly (by 6 bp) in the same period. The CET1 Fully Loaded capital ratio,[13] which is calculated at each date by applying the full implementation of the solvency regulation without applying transitional adjustments, improved by 0.1 pp as compared with the value in 2017.

The distribution of the change in 2018 of the CET1 ratio shows some concentration in negative values, indicating that the decrease in the solvency ratio relates to a set of institutions representing a high volume of RWAs in the sector. Chart 2.18.A shows the distribution, by volume of RWAs, of the change in the CET1 ratio between December 2017 and December 2018. It can be seen that most of the curve corresponds with negative values of the rate of change. Chart 2.18.B shows how most banks record increases in the CET1 level, whereas the number of banks increasing or decreasing their RWAs is relatively balanced. This analysis indicates that, in some cases, the increase is greater in RWAs than in CET1, resulting in a reduction of the ratio, and that, in general, small firms increase their ratio, but they are not sufficiently significant to increase the CET1 ratio at aggregate level.

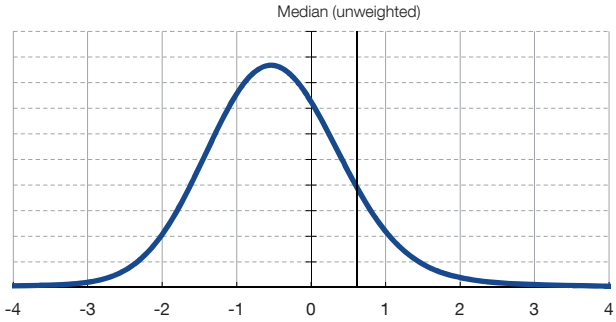
At aggregate level, equity instruments and reserves are the main components of CET1 capital as at December 2018, while transitional adjustments represent a very small

13 The CET1 Fully Loaded (FL) capital ratio between 2017 and 2018 was affected by the entry into force of the new IFRS 9 accounting regulations, applicable to the ratio in 2018 but not in 2017, when the standard was not even partially in force. In any event, in order to fully compare FL ratios it would be necessary to discount from the 2017 ratio the impact of the entry into force of IFRS 9.

CHANGE IN THE CET1 CAPITAL RATIO CHART 2.18

In terms of risk-weighted assets, there were more reductions than increases in the CET1 ratio from December 2017 to December 2018. In terms of banks, more increased their CET1 ratio in 2018 than reduced it.

A DISTRIBUTION OF THE CHANGE IN THE CET1 RATIO (a)



B RATE OF CHANGE IN THE CET1 RATIO AND IN RWAs IN 2018 (b)

SOURCE: Banco de España.

a The chart shows the density function (or the frequency distribution) of the change in the CET1 ratio from December 2017 to December 2018 for Spanish deposit institutions, weighted by the risk-weighted assets of each bank in 2017. This density function is proxied by a kernel estimator, which enables a nonparametric estimate of the density function, providing a continuous and smoothed graphical representation of this function. The vertical line represents the median (unweighted) of the rate of change of the CET1 ratio from December 2017 to December 2018.

b The points above the bisecting line show growths (declines) in the volume of CET1 in 2018 higher (lower) than the growth (decline) in the volume of RWAs; accordingly, they would correspond to increases in the CET1 ratio in 2018. The opposite occurs for the points below the bisecting line.

proportion owing to the degree of implementation of Basel III. Chart 2.19.A details the composition of the CET1 ratio in terms of risk-weighted assets. Equity instruments and reserves represent 9 pp and 6 pp, respectively, of the CET1 ratio. Minority interests represent 1 pp of the ratio and transitional adjustments have reduced their weight to below 0.5 pp of the ratio. As for deductions from CET1, the most significant from a quantitative viewpoint are those arising from goodwill and other intangible assets (3.2 pp of the ratio), followed by those derived from deferred tax assets (1.2 pp of the ratio).

The performance of CET1 capital in the past four years differs from that of dividends (approximately €25 billion in total volume) distributed by Spanish banks in that period (1.8 pp relative to the volume of RWAs at December 2018). Chart 2.19.B shows how the distribution of dividends in the period 2015-2018 has remained within a range of between 0.6 pp and 0.3 pp relative to RWAs in 2018. With a pay-out ratio of around 50% of net profit for the sector as a whole, the organic generation of capital does not appear to be sufficient for banks to be able to respond swiftly to an increase in the demand for credit or to address the need to absorb losses should any of the risks mentioned in this FSR materialise, without significant further erosion of their CET1 ratio.

In comparative terms, the CET1 ratio of Spanish banks at December 2018 was ranked last among the main European countries, while in terms of the leverage ratio their position is more favourable. Chart 2.20 shows the European comparison of two solvency measures, the CET1 ratio (Chart 2.20.A) and the leverage ratio (Chart 2.20.B) based on data published by the European Banking Authority in December 2018.[14] As for the highest-quality capital ratio, Spain stands last in the European context. For its part, the leverage ratio of Spanish banks stood at 5.4%, higher than the European average (5.3%) and the main European countries.

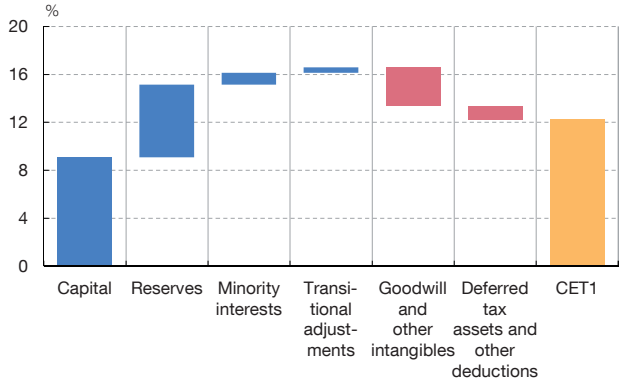
14 See http://www.eba.europa.eu/risk-analysis-and-data/risk-dashboard

COMPOSITION OF THE CET1 RATIO AND DIVIDENDS AS A PERCENTAGE OF RWAs

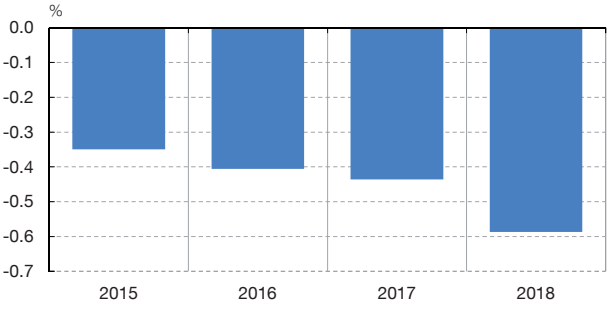
CHART 2.19

Capital instruments and reserves are the main components of CET1 and jointly represent over 90% of its eligible elements. In recent years, dividends have accounted for a percentage of between 0.2% and 0.6% of risk-weighted assets.

A COMPOSITION OF THE CET1 RATIO RELATIVE TO RISK-WEIGHTED ASSETS



B DIVIDENDS AS A % OF RISK-WEIGHTED ASSETS IN 2018



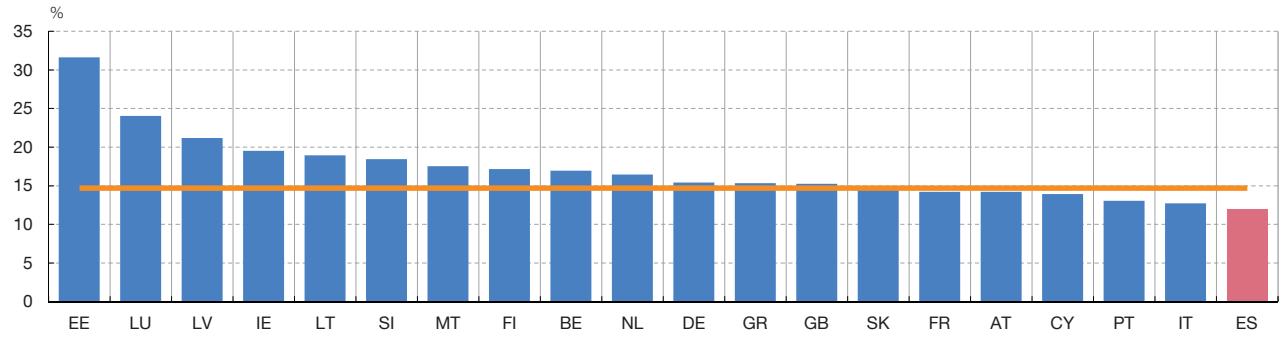
SOURCE: Banco de España.

SOLVENCY. EUROPEAN COMPARISON. SSM COUNTRIES AND UNITED KINGDOM. December 2018

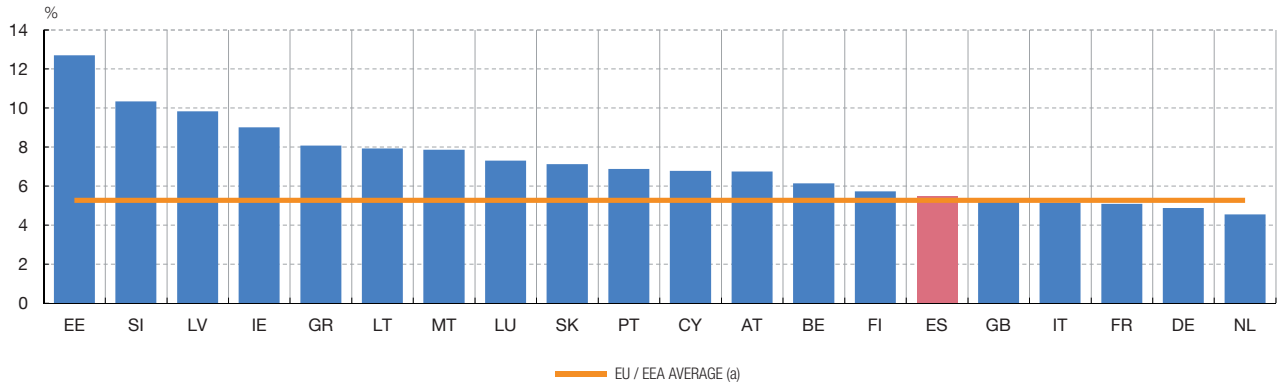
CHART 2.20

In terms of the CET1 ratio, Spanish banks stand last among the main European countries; but in terms of the leverage ratio their position is more favourable and their ratio exceeds the European average.

A CET 1 RATIO



B LEVERAGE RATIO



SOURCE: EBA.

a EBA data include Iceland.

2.1.3 ANALYSIS OF SENSITIVITY OF SOLVENCY TO MACROECONOMIC CONDITIONS

The Banco de España has been conducting regularly since 2013 tests of the Spanish banking system's resilience using an analysis framework known as FLESB (Forward Looking Exercise on Spanish Banks). The results of the latest FLESB exercise for the 2018-2020 horizon, in which the same macroeconomic scenarios were applied as those designed for the European stress tests exercise for 2018 coordinated by the EBA,[15] were published in the November 2018 FSR. Based on this exercise, a sensitivity analysis is conducted which aims to study the impact on the Spanish banking sector's solvency of shocks to certain macroeconomic variables in comparison with baseline scenario values. The shocks considered relate to extreme adverse values in the individual series of the macroeconomic variables.

Sensitivity scenarios

The baseline scenario for the FLESB and EBA exercises included the most likely changes in the economic environment for Spain over the three years of the exercise from 2018 to 2020, based on the projections available in early 2018. Shocks to different macroeconomic variables were applied to this scenario which are either related to the macrofinancial risks identified in this FSR or have been identified as significant for assessing solvency in previous FLESB exercises. The sensitivity analysis is conducted to study the impact which each of these variables could have on bank solvency in the event that an extreme adverse shock to it were to materialise in accordance with its historical distribution. Measurement of a greater impact does not necessarily imply that the shock will be more likely to materialise. In particular, four sets of shocks were studied: i) less global buoyancy with an impact on international trade; ii) increased uncertainty in Spain with downward adjustments in household consumption and in business investment, iii) downward adjustments in equity market prices, and iv) in house prices. For each of these stressed cases, shocks are applied to the relevant variables[16] that relate to historical bouts of high and very high stress (5th and 1st percentiles, respectively, of their distributions) and the endogenous response to the rest of Spanish macroeconomic variables is calculated on the basis of the Banco de España's macroeconometric models. Thus, a complete macro scenario is obtained consistent with the shock introduced. Since four sets of shocks and two levels of severity are considered, there are eight different simulation scenarios.

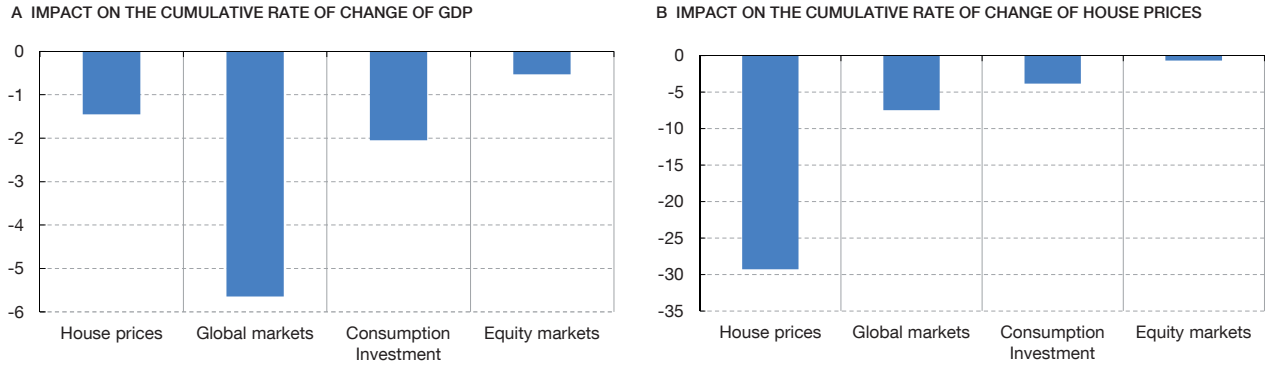
The effect of these shocks to GDP and to house prices in Spain is significant. Chart 2.21 shows the cumulative impact over the three years of the exercise of the change in GDP and house prices under simulated scenarios relative to the baseline scenario. Only the episodes of higher stress for each of the variables are shown (1st percentile). In the baseline scenario, GDP grows steadily at an annual rate of more than 2%, reaching cumulative growth of up to 6.7%. Chart 2.21.A shows that the impact on cumulative growth of GDP over the three years of the exercise ranges from 0.5 pp under the scenario of shock to equity prices, to 5.7 pp under the scenario of shock to international trade. House prices maintain annual growth of around 5% under the baseline scenario, with cumulative growth of 15.5%. The impact on cumulative growth ranges between only 0.7 pp under the scenario of shock to equities and 29.3 pp under the scenario where an exogenous shock is directly applied to the house price path (see Chart 2.21.B).

15 The scenarios for the EBA exercise are publicly available via the following link: https://eba.europa.eu/documents/10180/2106649/Adverse+macroeconomic+scenario+for+the+EBA+2018+Stress+Test.pdf

16 Specifically, in the scenarios of stressed global markets a shock to world trade affecting Spanish exports is introduced, causing a direct impact on GDP and an indirect one through the model's endogenous response. The scenarios of activity apply simultaneous shocks to consumption and investment, while in the scenarios stressing the stock exchange and the real estate market shocks are applied to price growth.

FLESB SENSITIVITY ANALYSIS SCENARIOS (a) CHART 2.21

The shock to global markets, impacting Spanish exports, is what exerts a maximum effect on GDP, followed by the shock to consumption and domestic investment. The scenario with a direct shock to the growth of house prices has a significantly greater impact on this variable than the indirect impacts associated with the other scenarios.



SOURCE: Banco de España.

a Both for cumulative GDP growth and house prices, what is shown as the impact of the sensitivity scenarios on the level reached in the baseline scenario within the exercise's horizon (2018-2020). For example, the impact of -1.45 pp associated with the house price shock in panel A indicates that the cumulative growth of GDP for 2018-2020 under this scenario is 1.45 pp lower than under the baseline scenario. The baseline scenario coincides with that designed for the stress test coordinated by the EBA at the European level, and the sensitivity scenarios include solely those associated with the 1st percentile of the distribution of the four sets of shocks under study.

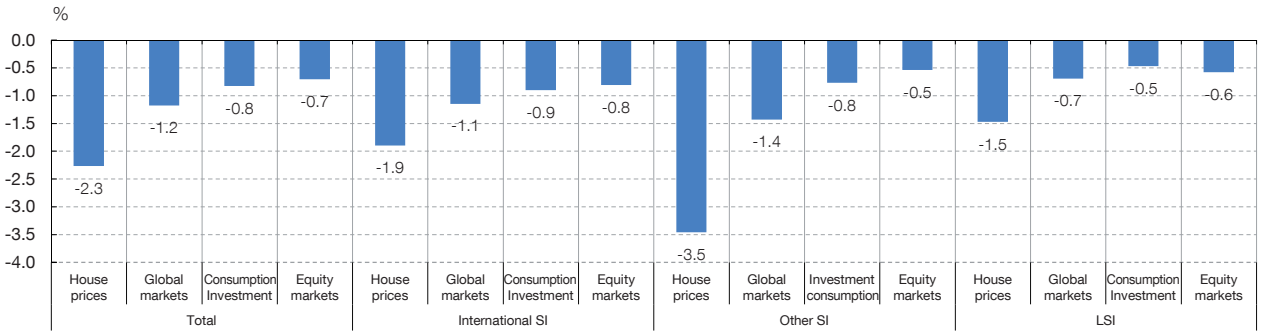
To conduct this analysis the FLESB framework methodology was used in order to transfer the changes in the national macroeconomic scenario to the results of the banking business in Spain and to the level of solvency of the banking groups. To estimate the results on solvency, the data from 57 banks relating to December 2017 are used as a starting point (12 under the SSM's direct supervision and 45 less significant institutions).[17] Chart 2.22 includes the results, by type of institution, in terms of the difference between the average CET1 Fully Loaded capital ratio at the end of the horizon for the baseline scenario and for each of the adverse scenarios. The scenario associated with a greater impact on the CET1 ratio relates to the extreme shock to house prices. This is largely due to the loss in value experienced by real estate collateral, which entails a higher increase in the loss in the event of non-performance, and a greater loss associated with the settlement of foreclosed assets. These losses are much lower in the case of scenarios with a greater impact on activity.

The average CET1 ratio at the end of the analysis time horizon for all the institutions would be 2.3 pp lower under the highest-impact adverse scenario (extreme shock to house prices) than under the baseline scenario. Under this highest-impact scenario (1st percentile), the CET1 ratio would post an aggregate decrease relative to the baseline scenario of 1.9 pp in the case of SIs with significant international activity, of 3.5 pp for other SIs and of 1.5 pp in the case of LSIs. The difference in impact between SIs and LSIs arises from the different portfolios and business characteristics of the two types of institutions. In turn, SIs with international activity are more resilient, since profits obtained by foreign subsidiaries absorb a portion of the losses arising from the downturn in national economic activity incorporated into the analysis. The lower impact relates to the scenario of shock

17 The capital of institutions with international activity could also deteriorate owing to the impact of a change in the macroeconomic scenario on their subsidiaries' activities. Based on the results of the November 2018 FLESB exercise, the impact attributable to the activity of subsidiaries on the CET1 ratio under a full adverse scenario would be 0.8 pp in aggregate terms. This measure may be used as a ceiling, since the set of shocks under the sensitivity scenarios is more restricted than under the full adverse scenario. This possible further erosion is more significant for scenarios involving a downturn in global markets, which are more likely to have international ramifications.

RESULTS OF FLESB SENSITIVITY ANALYSIS (a) CHART 2.22

The average CET1 ratio shows a maximum sensitivity to the introduction of an adverse extreme shock to house prices, both for the total and for each of the relevant sub-groups. The shocks to activity, and especially that associated with the downturn on global markets, also have a significant impact on solvency. The group of institutions most sensitive to the deterioration in macroeconomic conditions is that of significant institutions without major international activity.



SOURCE: Banco de España.

a The results are presented in terms of the difference in the CET1 capital ratio (FL) at the end of the analysis horizon in each of the adverse scenarios compared with the level attained under the baseline scenario (coinciding with that designed for the stress test coordinated at the European level by the EBA). Solely the scenarios associated with the 1st percentile of the distribution of these four sets of shocks are included. The results are shown both for the total and for each type of institution: International SI (significant institutions under the SSM supervision with significant international activity), Other SI (other significant institutions under SSM supervision) and LSI (less significant institutions under direct national supervision).

to equity prices,[18] owing to its moderate effect on losses from credit portfolios and foreclosed properties.

The analysis discloses a significant impact of the hypothetical downturn in the Spanish economy on changes in the solvency of institutions, although the system has an appropriate degree of aggregate solvency under all the scenarios considered. As mentioned previously, it should be borne in mind that each of the sensitivity scenarios represents the individual materialisation of each of the risks. However, some of these risks are interrelated and, therefore, may materialise together. This would lead to a greater impact on the solvency of institutions, as occurred, for example in the FLESB exercise published in the November 2018 FSR, which used a full macro scenario.[19] Also, the most critical adverse scenarios evaluated in this exercise are concentrated in shocks to national economic activity and house prices. These are only part of the broader set of macrofinancial risks that are significant for the Spanish financial system and which are analysed in Chapter 1.

The correct interpretation of results requires taking into account that sensitivity to macroeconomic factors of the financial system may change over time and the importance of each factor should be assessed within the risk identification framework of this FSR as a whole. Changes in bank balance sheets, with developments such as the decline in real estate exposures or the change in international positions over the course of 2018, imply that sensitivities to macroeconomic factors may change over time, requiring ongoing monitoring of these effects. The most significant risks identified in the introduction and Chapter 1 of this FSR are the risks to activity, particularly owing to the downturn

18 A prudent adjustment is common to the scenario of shock to equities and the rest of the adverse scenarios, in connection with historical distributions, of different gross income items (e.g. gains or losses on financial transactions, which explain a substantial fraction of the impact of this scenario), with only a very moderate effect on macroeconomic variables and credit losses.

19 In the full macro scenario shocks are introduced not only to individual variables, but to a broad set of variables, producing more adverse final GDP paths than those considered in this exercise. This does not mean that in the full scenario shocks are calibrated on the 1st percentile of the individual distribution of each variable, which would produce a fairly implausible combined effect based on historical experience.

in global trade, more than risk factors relating to house prices, for which there is currently no evidence of overvaluation.

2.2 Non-banking financial sector and systemic interconnections

In most developed economies the financial system is comprised of a complex network of institutions with different corporate structures and regulatory regimes which in certain cases carry out similar activities. In performing their main functions, the institutions in the financial system establish relationships with each other and also with non-financial corporations, households and the public sector. Banks tend to play a central role in the financial system, but other agents also perform key activities and, in some cases, offer funding to the rest of economic agents in a manner similar to banks.

2.2.1 STRUCTURE OF THE NON-BANKING FINANCIAL SECTOR

Non-bank financing is an alternative to bank financing which encourages competition and increases the sources of funds but it may also entail certain risks. Alternative sources of financing allow economic agents greater flexibility when obtaining funds for investment or consumption and may contribute to greater diversification of the risks taken by the financial system. However, the global increase in the size of the non-banking sector in recent years and its involvement in activities inherent to the banking sector (liquidity or maturity transformation, credit risk transfer or leverage) may also become a source of risk, directly or as a result of its interconnections with the banking sector.

In recent years interconnections within the financial system have become increasingly prominent on the agendas of national and international regulatory and supervisory bodies. This is because of their importance in the latest financial crisis, where it became obvious that at times of stress, these interconnections may mean that shocks, which initially seem institution or sector-specific, are passed on to other sectors. The analyses conducted in recent years have focused on studying non-bank financial institutions which extend financing to financial and non-financial sectors of the economy.

The information in the Spanish Financial Accounts allows the volume of financial assets of the various banking and non-banking segments of the financial system to be measured. On Financial Accounts data (non-consolidated and of institutions domiciled in Spain) a broad range of agents that make up the financial sector can be identified and which, based on the nature of their activities may be key, to some degree, to the functioning of the system. The use of Financial Accounts data (non-consolidated and of institutions domiciled in Spain) makes it possible to identify a broad range of agents that make up the financial sector and that, depending on the nature of their activities, differ in their degree of centrality in the functioning of the system. For the purposes of the analysis in this section, the financial system is split into four categories: i) deposit-taking institutions (or banks), ii) other financial entities (specialised lending institutions, investment funds, other financial intermediaries and other sectors),[20] iii) insurance companies, and iv) pension funds.

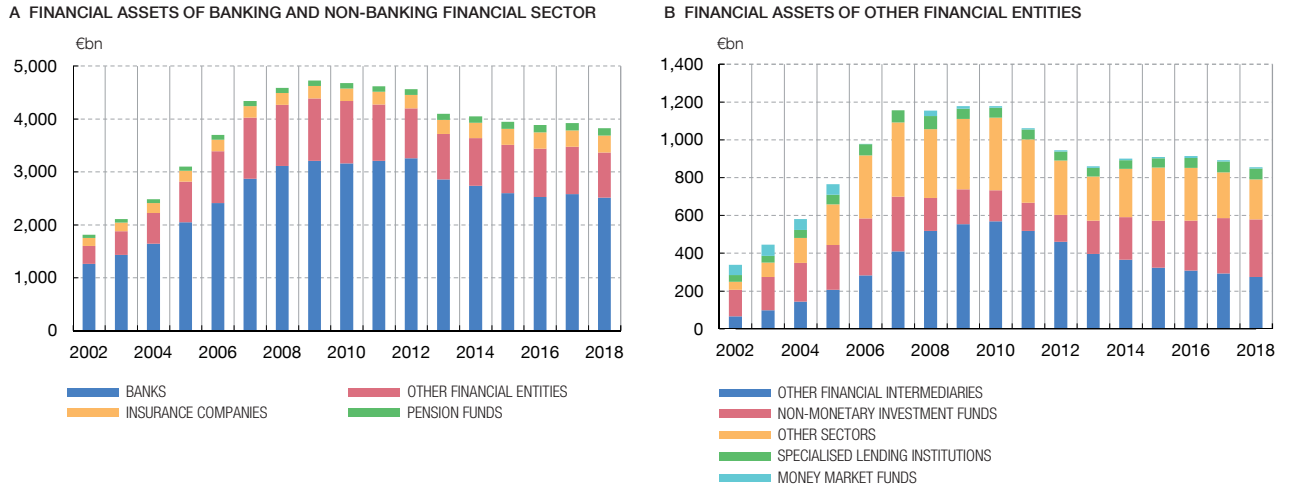
The banking sector remains the main component of the financial system, despite the decline in its financial assets following the latest crisis. Chart 2.23.A shows that, despite the reduction in its financial assets since 2012, banks remain the largest sector in the financial system with a volume of approximately €2.5 trillion.[21] The banking sector currently

20 The other sectors include financial auxiliaries (such as securities brokers, appraisal firms, mutual guarantee companies and clearing and settlement institutions and the headquarters of financial groups) and captive financial institutions and money lenders (such as holding companies or issuers of preferred shares).

21 Financial assets generally include cash and various financial instruments held under assets on the balance sheet, excluding tangible fixed assets. The full definition is given in paragraph 11 of IAS 32 and Rule 19, paragraph 4 of Banco de España Circular 4/2017.

TOTAL FINANCIAL ASSETS OF THE SECTORS COMPRISING THE FINANCIAL SYSTEM CHART 2.23

The Spanish financial system continues to be a strongly banked one, despite the reduction in bank assets in the post-crisis years. The institutions whose volume has most increased in recent years are non-monetary investment funds.



SOURCE: Banco de España.

represents around 66% of the total financial system (after reaching 71% in 2012), insurance companies represent 8%, pension funds 4% and other financial entities have a combined share of 22%. All the segments increased their size in the pre-crisis period, especially banks and other financial entities. As from 2009, only the insurance companies and pension funds increased their size, whereas the banking sector and other financial entities began to shrink. The weight of the three non-banking sectors in the financial system rose in recent years owing to the decrease of the banking sector (from 2012 to 2018 the weight of other financial entities increased by approximately 1 pp and that of insurance companies and pension funds by 2 pp).

Within the other financial entities sector, other financial intermediaries led the growth of this segment before the crisis and then significantly decreased their volume of financial assets afterwards; the relative share of non-monetary investment funds and specialised lending institutions (SLIs) has increased since 2012. Based on the Financial Accounts classifications, Chart 2.23.B shows the changes in the financial assets of i) SLIs, ii) money market funds, iii) non-monetary investment funds, iv) other financial intermediaries,[22] and v) other institutions. The size of other financial intermediaries increased considerably in the period 2002-2012 and decreased subsequently, in 2018 it was close to its size in 2005. Non-monetary investment funds together with SLIs (which grew 21%) are the only institutions which have increased their size in recent years. These institutions grew by 114% from 2012 to 2018, although they represent a small percentage of the total financial system (8% in 2018).

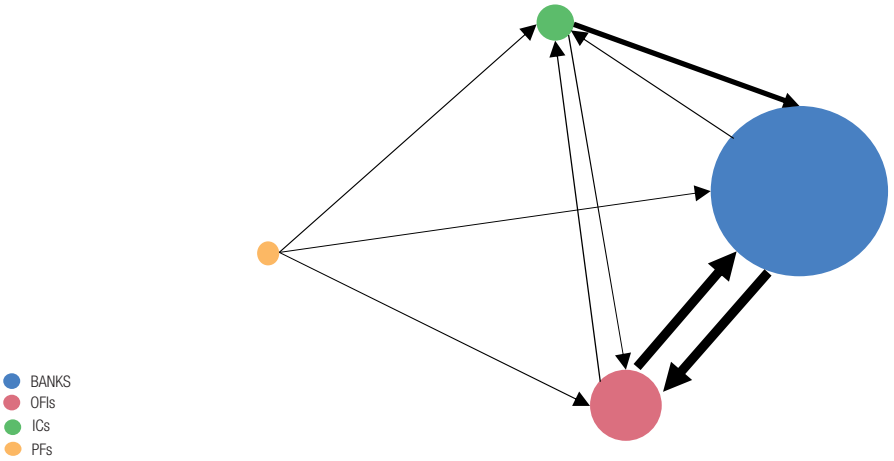
2.2.2 INTERCONNECTIONS AND POTENTIAL CONTAGION BETWEEN FINANCIAL INTERMEDIARIES

The interconnections within the financial system may help to absorb risks, but may also act as contagion channels, and need to be quantified. The relationships between financial entities may be direct (for example, through loans or holdings of instruments, owned by certain institutions, which were issued by other institutions) or indirect (through investments in assets or similar non-financial sectors). Furthermore, certain insurance companies, pension funds or other financial entities may be part of banking groups, which creates additional channels for the pass-through of shocks from one sector to another,

22 The other financial intermediaries category includes broker-dealers, securitisation special purpose entities (structured financial vehicles), venture capital firms, bank asset funds, central counterparties and asset management companies (including Sareb), in addition to other entities.

INTERCONNECTIONS BETWEEN BANKS, INSURANCE COMPANIES, PENSION FUNDS AND OFIs (a) **CHART 2.24**
September 2018

The banking sector plays a central role and is mainly connected to other financial institutions.

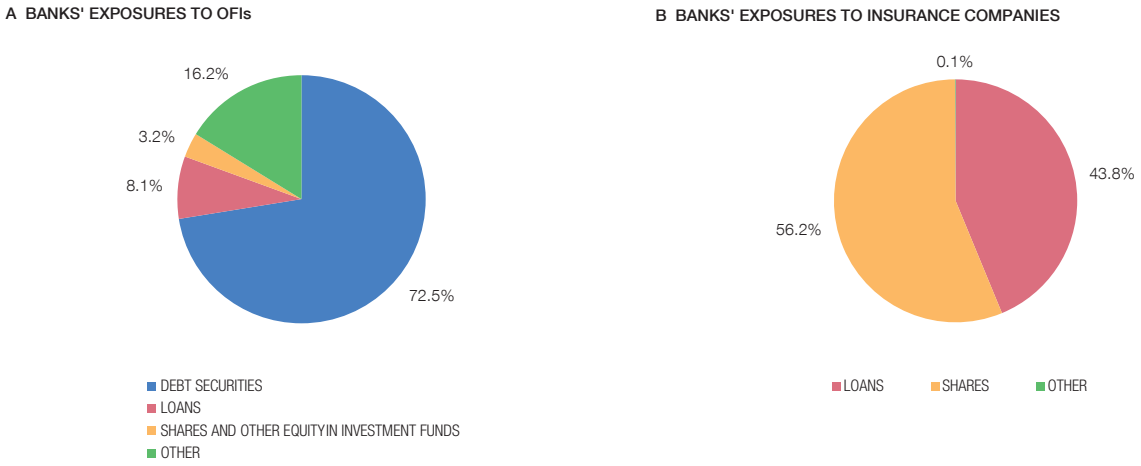


SOURCE: Banco de España.

a The chart shows the interconnections between the different sectors of the financial system. The size of the circles is proportionate to the size of the sector and the thickness of the arrows proportionate to the scale of interconnections (the volume of direct exposures that each sector has vis-à-vis the others). The abbreviations OFIs, ICs and PFs refer to Other Financial Institutions, Insurance Companies and Pension Funds.

BANKS' EXPOSURES TO OTHER SECTORS **CHART 2.25**
September 2018

Banks exposures to OFIs mainly comprise debt securities, while shares and loans make up their exposures to insurance companies.



SOURCE: Banco de España.

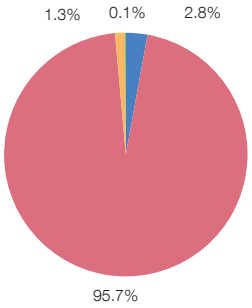
because the group may bail out its ailing members. The links between the various segments of Spain's financial system were analysed using a subgroup of the other financial entities, in line with data on interconnections included in the exercise of the Financial Stability Board (FSB). This subgroup is denoted other financial institutions (OFIs).[23]

23 The interconnections analysed in the FSB exercise focus on the direct intra-sectoral relationships and are measured as the volume of assets and liabilities held by each type of institution vis-à-vis other types of institutions. All the direct interconnections data are based on information available in the Financial Accounts. The sector called "Other Financial Institutions" (OFIs) should not be confused with the "Other Financial Intermediaries" sector in the Financial Accounts which represents only a part of the OFIs. The OFIs subgroup includes (monetary and non-monetary) investment funds, specialised lending institutions and the category of other financial intermediaries, according to its breakdown in the Financial Accounts (which is described in the previous section).

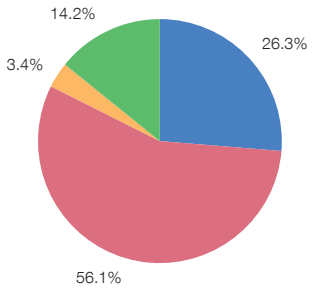
BANKS' LIABILITIES TO OTHER SECTORS AND OFIs' INTERCONNECTIONS WITH OTHER SECTORS CHART 2.26

The deposits held by the other sectors at banks are the main form of banks' liability positions vis-à-vis the non-bank financial sector. OFIs' exposures and liabilities to banks account for close to 15% of their assets.

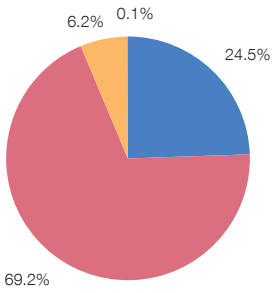
A BANKS' LIABILITIES TO OIF (a)



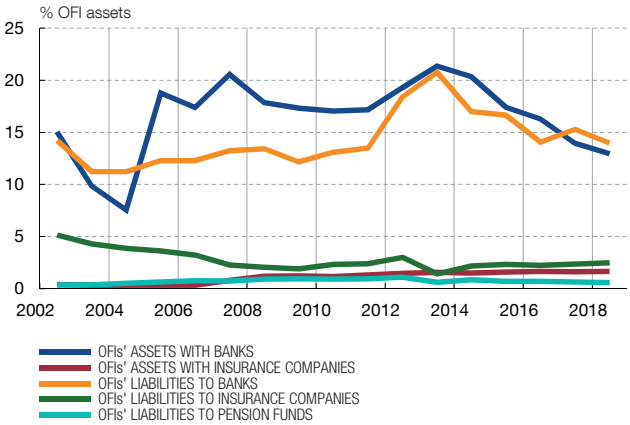
B BANKS' LIABILITITES TO INSURANCE COMPANIES (a)



C BANKS' LIABILITIES TO PENSION FUNDS (a)



D OFIs' INTERCONNECTIONS WITH BANKS, INSURANCE COMPANIES AND PENSION FUNDS



SOURCE: Banco de España.

a Data referring to September 2018.

The most important interconnections arise between the banking sector and the OFIs. Chart 2.24 shows the central role played by the banking sector in Spain within the financial system overall. In turn, it can be seen that the most interconnected segment to banks is that of OFIs, with both asset and liabilities-side positions on the balance sheet contributing to this interconnection. None of the sectors has direct exposure to pensions funds since these institutions do not issue liability instruments that other sectors may acquire, rather they are financed by the contributions of pension fund members.

Banks' exposure to OFIs and to insurance companies through their assets is concentrated in fixed-income securities and shareholdings, respectively, whereas the connections through their liabilities arise mostly from deposits for all types of non-bank financial institutions. Chart 2.25 shows how most of banks' exposures to OFIs are through debt securities (72%), followed by loans (8%) and shares and other equity in investment funds (3%). Other instruments (the difference between the total and the three above-mentioned categories) represent 16% of the total. Exposures to insurance companies are concentrated in shares (56%) and loans (44%). Panels A to C of Chart 2.26 show how deposits held by the other sectors at banks represent most of banks' total exposure on the liabilities side (56.1% to insurance companies and 95.7% to OFIs) and debt securities also have

a notable weight of approximately 25% in the case of liabilities vis-à-vis insurance companies and pension funds.

OFIs' connections to banks, insurance companies and pension funds are smaller in volume than banks' connections but they represent a higher percentage of OFIs' total assets. Chart 2.26.D shows that OFIs' exposures in terms of assets and liabilities vis-à-vis banks represent around 15% of OFIs' assets in 2018. However, their connections with the other sectors have a smaller weight of less than 2.5% of their assets. Over time, OFIs' exposures to banks peaked at more than 21% of their total assets in 2013 and from then onwards they began to decrease until 2018.

In short, banks are the most significant institutions in terms of size within Spain's financial system and the interconnections between the banking sector and the other financial sectors are relatively small, especially when they are measured in terms of the banking sector's size. However, in order to have a complete image of the interconnections between the banking sector and the non-banking financial sectors, it will also be necessary to analyse the activity of agents domiciled abroad which perform cross-border transactions with Spain's domestic sector. Additionally, although the banks' exposure to other sectors seems contained, it is necessary to perform a regular monitoring of changes in these links and complement it with an analysis of the indirect interconnections and the vulnerabilities that they may trigger in relation to financial stability. This section will report regularly on the aforementioned analysis. Lastly, it will be important to perform an in-depth analysis of the behaviour of the financial system's various components vis-à-vis possible shocks in order to identify possible risk propagation channels which require special attention.

2.3 Changes in operational risks

The costs associated with operational risk have increased significantly in recent years. Operational risk is defined by the Basel Committee on Banking Supervision (BCBS) as the risk of loss at institutions resulting from inadequate or failed internal processes, people and systems or from external events. This definition includes legal risk, but excludes strategic and reputational risk. The increase in these costs was widespread across jurisdictions and is related to the increase in litigation, unfavourable court decisions and sanctions imposed on deposit-taking institutions following the crisis (legal risk), as well as to technological change taking place in the sector (technological risk) which gives rise to specific needs associated with replacing infrastructures and digitalisation.

2.3.1 LEGAL RISKS AND COSTS

The legal costs of bank misconduct have increased significantly since the start of the financial crisis both for European and US banks. Chart 2.27.A shows the estimated volume of costs associated with conduct risks in the period 2011-2015 for the main European and US international banking groups. As can be seen, these costs were higher in the United States than in Europe but were heavy in both cases and represented a significant percentage of net profit for the banking groups in both geographical areas. These developments were also highlighted by the ESRB, which identified a rising trend in conduct costs at global and European level from 2009 to 2015.[24] The information available for the period 2016-2018 reveals that misconduct costs continue to be a significant component of operational costs[25]

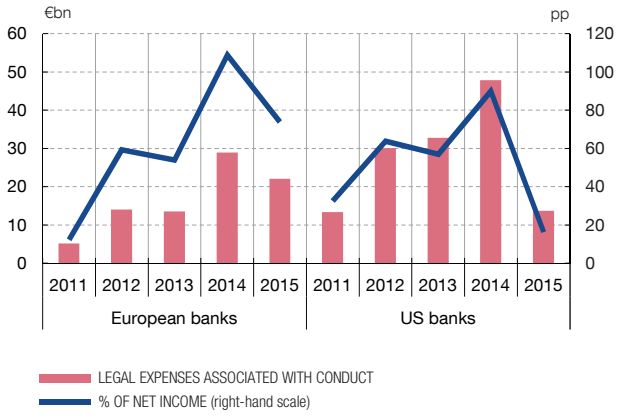
24 ESRB "Report on misconduct Risk in the banking sector 2015" available at https://www.esrb.europa.eu/pub/pdf/other/150625_report_misconduct_risk.en.pdf

25 Comparing CCP Research Foundation conduct cost estimates for large international banking groups in the periods 2012-2016 and 2011-2015, costs in 2016 were comparable to those in 2015 but lower than the highs of 2014. The responses of European banks to the Risk Assessment Questionnaire included in the EBA's "Risk Assessment of the European Banking System" (RAEBS) shows a significant portion of European banks expect legal costs to grow in 2016-2017. See, for example, Section 6.2 of the EBA report at https://eba.europa.eu/documents/10180/2518651/Risk_Assessment_Report_December_2018.pdf

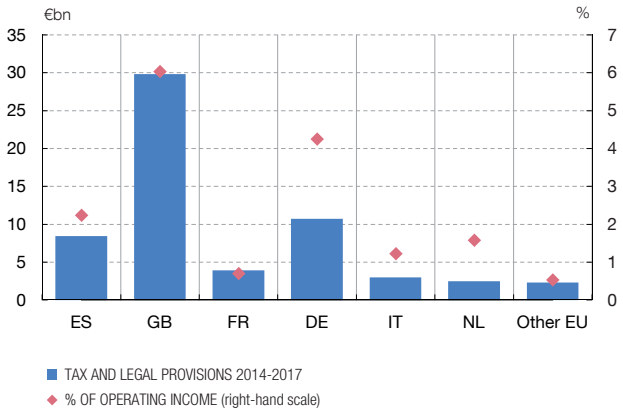
MISCONDUCT COSTS AND PROVISIONS FOR LEGAL EXPENSES CHART 2.27

The costs associated with misconduct by the major US and European banking groups have been heavy in recent periods. In addition, in the period from 2014 to 2017, European banks set aside notable provisions for legal expenses and tax lawsuits, with cross-country heterogeneity evident.

A MISCONDUCT COSTS (a)



B PROVISIONS FOR LEGAL EXPENSES AND TAX LAWSUITS (b)



SOURCES: CCP Research Foundation, SNL Financial and EBA.

a The panel combines data on expenses associated with misconduct estimated by CCP Research Foundation for large European banking groups (Lloyds, Barclays, RBS, Deutsche Bank, HSBC, BNP Paribas, Santander, Commerzbank, Societe Generale, Standard Chartered, ING) and for large US banking groups (Bank of America, JP Morgan, Morgan Stanley, Citigroup, Wells Fargo, Goldman Sachs) with net profit data obtained from SNL Financial.
b Annual data for the period 2014-2017 based on information from the EBA's transparency exercises. The data for each country relate to a group of significant institutions which may vary each year.

and several significant cases of money laundering[26] were detected in Europe in 2018.

The information from the EBA's transparency exercise shows that provisions for legal issues and tax litigation consume a significant portion of European banks' net operating income, with heterogeneity across countries. The data used by the EBA [27] extend the sample of banks and European countries considered to cover more than the main banking groups. This measurement of costs is different to that presented in the previous paragraph since it includes provisions for legal costs. These provisions reflect banks' anticipation of future expenses which may differ from the expenses finally incurred. Provisions for legal expenses averaged 2.4% of net operating income for the period 2014-2017, however, this percentage ranged from 6% in the United Kingdom to 0.6% in France (Chart 2.27.B).

The forward-looking analysis in the EBA's 2018 stress test includes operational risk as a significant risk factor, with misconduct costs representing more than half of the risk impact under the adverse scenario. The high legal expenses observed recently for the European banking sector do not necessarily indicate that they will remain at these levels in the future and it is necessary to conduct forward-looking exercises to obtain reasonable projections and gauge plausible adverse scenarios. The EBA's approach in its 2018 stress test combines banks' internal projections with conservative floors based on historical experience. Aggregate operational risk losses under the adverse scenario are €82 billion (with a negative impact on the CET1 ratio of 100 bp) for the period 2018-2020.

26 The EBA's 2018 RAEBS points out five significant cases of money laundering and violation of anti-corruption laws in 2017-2018 which affect banks in central and northern Europe and amount to €3.5 billion in terms of expenses and higher capital requirements.
27 The data of the EBA's transparency exercise are available at: https://eba.europa.eu/risk-analysisand-data/eu-wide-transparency-exercise/2018/results

Of this amount, conduct risk losses total €54 billion under the adverse scenario (65% of the total impact of operational risk).[28] The results of this exercise for individual banks also show considerable heterogeneity.

In its review of operational risk, the BCBS changed its formula for calculating operational risk capital requirements. Specifically, the possibility of using internal models was eliminated and a standardised model was adopted whereby each bank's experience of operational risk losses can be considered in proportion to its turnover. Generally, the higher the operational risk losses of each bank over a relatively long period of years, the higher its capital requirements.

In the specific case of the Spanish banking sector, there are indications that the operational cost associated with legal risks is a material risk factor. Spanish banks are facing a potential increase in legal action due to outstanding litigation, such as that relating to the use of the mortgage loan benchmark index (IRPH, by its Spanish abbreviation) in mortgage loans. In fact, various lawsuits about the legality of using the mortgage loan benchmark index as a reference rate for setting the variable interest rate on mortgage loans has led to a question being referred for a preliminary ruling to the CJEU. The CJEU's response, expected for the second half of 2019, may prompt an increase in legal action concerning this matter and affect the expected legal cost of this action for banks. The potential impact on Spanish banks would be quite diverse, given their varied use of this type of contract. Experience in previous lawsuits, particularly those on mortgage floor clauses, indicates that these legal processes may be of significant complexity and considerable duration, as well as having a material impact of banks' profits. Specifically, it is estimated than more than €2.2 billion were refunded to customers until January 2019 as a result of floor clause-related litigation, the greatest impact was on banks' earnings due to the provisioning of €1.9 billion in 2016.[29]

2.3.2 VULNERABILITIES AND INFRASTRUCTURE RISKS

Financial institutions' operations are underpinned by infrastructure networks whose configuration has material economic effects on the institutions that use them, impacting, for example, operational risks and the availability of information. The main infrastructures are payment systems, settlement systems and central counterparties (CCPs). As a result of the regulatory changes following the 2008 crisis, most of the volume of derivatives and equity instruments trading was transferred from OTC markets to the CCPs. Box 2.2 analyses in detail how CCPs operate.

Brexit poses some risks for how CCPs operate but mitigating measures have been adopted both in Europe and in Spain. One of the main CCPs is located in the United Kingdom and, consequently, Brexit could represent a significant risk for European banks which operate with it. However, the European Commission recently decided to broaden qualified CCP status so they may operate with European financial institutions.[30]

28 The aggregate results on operational risk are included in Section 4.1.4 of the EBA's 2018 EU-wide Stress Test Results at: https://eba.europa.eu/documents/10180/2419200/2018-EU-wide-stress-test-Results.pdf

29 Litigation relating to mortgage floor clauses is described in Box 2.2 of the May 2017 Financial Stability Report. The fall in the EURIBOR from 2008 activated these contract clauses which limited the pass-through of the lower level of the EURIBOR to the effective rate applicable to mortgages. As a consequence of the activation of these clauses, lawsuits were brought which followed a protracted process and passed through various appeal courts until they reached the Supreme Court. Under the Supreme Court judgment 241/2013 of 9 May 2013, floor clauses were found to be null and void non-retroactively. Subsequently, in its judgment of 21 December 2016, the CJEU ruled that the non-retroactivity of the clause in judgment 241/2013 is not in accordance with EU law and extended the effects of its judgment to all mortgages with floor clauses and thus amplified its quantitative impact.

30 In December 2018 the European Commission issued an implementing decision determining, for a limited period of time, that the regulatory framework applicable to CCPs in the United Kingdom is equivalent to that existing for CCPs within the European Union in accordance with Regulation (EU) No 648/2012.

Central clearing counterparties[1] (CCPs) are financial entities that interpose themselves, in their own name, in financial instrument trades; they become a seller to each buyer and a buyer to each seller. Once a transaction is registered in the CCP, it simultaneously gives rise to a purchase operation and a sale operation, with both having the CCP as a counterparty. The CCP therefore assumes all the rights and obligations derived from both transactions, exposing itself to the counterparty risk both with the purchaser and with the original seller. Market risk, however, is zero.

The CCP shields itself from counterparty risk through a set of lines of defence. These include strict controls to gain access to clearing member status (and to be able to operate as such with the CCP), and a series of financial resources available to cover the losses caused by potential default by a member. These resources are, in the main, provided by the members in the form of guarantees backing positions (initial and variation margins) and of contributions to a fund for defaults (through which the CCP mutualises the losses among all the members). The CCP set aside a buffer of its own capital (known as "skin in the game"), whose volume is relatively insignificant compared with the members' contributions.

Set against bilateral clearing, centralised clearing offers a series of potential benefits, both for participants and for the system as a whole. The main benefit is the enhanced capacity to reduce the aggregate exposure of members (and, therefore, the market and counterparty risk to which they are exposed) by means of the netting of the positions of the opposite sign that are registered in their name (as the CCP is counterparty to all the transactions).

If a member defaults, netting also allows the position that is to be closed or transferred to be smaller, thereby lessening its potential impact on prices and market volatility. It also reduces the cost of providing collateral and capital allocation (if the member were a bank).

Centralised clearing also simplifies processes and adds transparency, by replacing the complex network of market relationships with bilateral clearing in a system that turns on a single entity (see Diagram A). This makes it easier for members to evaluate their positions and it strengthens prudent risk management, given that members are mainly exposed to an entity that is highly supervised and regulated.

From the standpoint of the authorities, centralised clearing simplifies the evaluation of market participants' exposure and, therefore, provides for swift decision-making in the face of a bout of tension. The CCP has specific processes for managing defaults, and these can contribute to reducing contagion risk and domino effects should, for example, a large member fail.

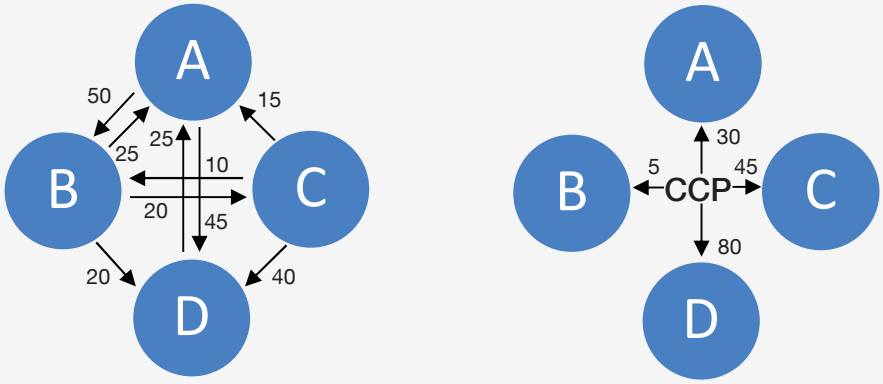
These advantages became manifest during the global financial crisis, in which centrally cleared markets proved relatively stable.[2] As a result, the G 20 leaders undertook in 2009 to require, among other measures, the centralised clearing of standardised OTC derivatives. This agreement has entailed a significant increase in centralised clearing activity. In 2018, for example, 76% of interest-rate derivatives (under the swaps and FRAs categories) were centrally cleared, compared with 17% in 2007 (see Chart A).[3]

1 This box is based on the article "Central Clearing Counterparties: benefits, costs and risks", Nuñez S. and E. Valdeolivas, forthcoming in the Financial Stability Review, Banco de España (May 2019).

2 At the time of its collapse, the US bank Lehman Brothers had an outstanding position of $9 trillion, corresponding to 66,390 transactions, in LCH.Clearnet Ltd (United Kingdom). This CCP concentrated approximately 50% of the total interest rate swaps market, and it had 20 members (all banks) in the swaps segment. The collapse was resolved through the auctioning of its positions and the use of the collateral provided by Lehman Brothers, without any other member posting losses [see Monnet, C. (2010). Let's make it clear: How Central Counterparties save(d) the day, Federal Reserve Bank of Philadelphia, Business Review Q1 2010; and Gregory, J. (2014). Central Counterparties: mandatory central clearing and initial margin requirements for OTC derivatives. John Wiley & Sons, June 2014].

3 Total interest rate derivatives account for approximately 81% of total traded OTC derivatives.

Diagram A
BILATERAL AND CENTRALISED CLEARING (a)



SOURCE: Banco de España.

a The left panel shows a bilateral clearing network, with each arrow pointing from borrower to lender. The right panel shows a CCP network that groups for each member all its bilateral positions in the left panel into a single net position with the CCP. For instance, member A holds lending (borrowing) bilateral positions for a total of 65 (95), resulting in a net position of (30).

This high volume of activity, combined with the fact that CCPs concentrate that risk in a single entity (which can potentially be redistributed through the fund for defaults, for example), explains their systemic nature. This systematicity can, in turn, be reinforced by the following characteristics observed in centralised clearing: the concentration of activity at the level of the CCP and of members; and the high interconnections, owing to the presence of common members. The failure of a CCP may, therefore, expose the system to high losses if the risks are not appropriately managed.

Chart B shows the market share of the main CCPs in the swaps segment, on the basis of currencies and geographical areas.

Operations are essentially concentrated in LCH.Clearnet Ltd, with the exception of activity in Latin America (CME Clearing (US)) and in yen (JSCC (JP)). This tendency is also observed in the CDSs segment, where ICE Clear US is predominant.

From the members' standpoint, 75% of activity is concentrated in around 20 entities (most of them banks). Chart C shows, for the swaps segment, the percentage of the aggregate initial margin (a proxy of activity) deposited by the five biggest members of the three CCPs most active in this segment. This percentage ranges from 24% to 69%. Chart E shows the high presence of banks in relation to the other clearing members.

The risk entailed for a CCP of being highly exposed to certain members is mitigated by the internationally recommended requirement. This stipulates that the guarantee fund should be of a size equivalent, at least, to the losses that might be generated by the member with the highest exposure in extreme but plausible market conditions.[4]

4 In the globally systemic CCPs, the size of the fund should be big enough to cover the losses of the two biggest members.

Chart A
OTC DERIVATIVES CLEARED THROUGH CCPs
Percentage of notional amount outstanding (a)

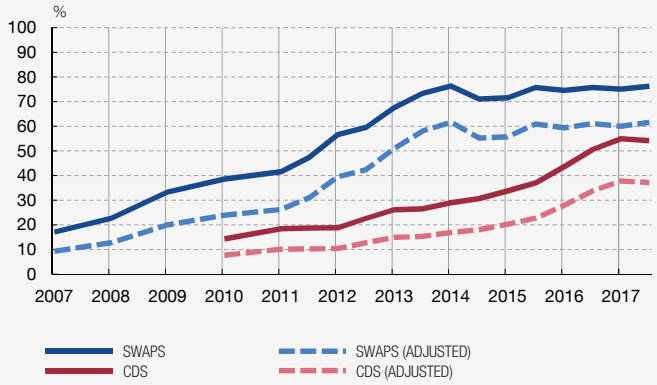


Chart B
VOLUMES CLEARED BY CCPs IN THE SWAP SEGMENT, BY CURRENCY AND GEOGRAPHICAL AREA. Percentage of market share (2018) (b)

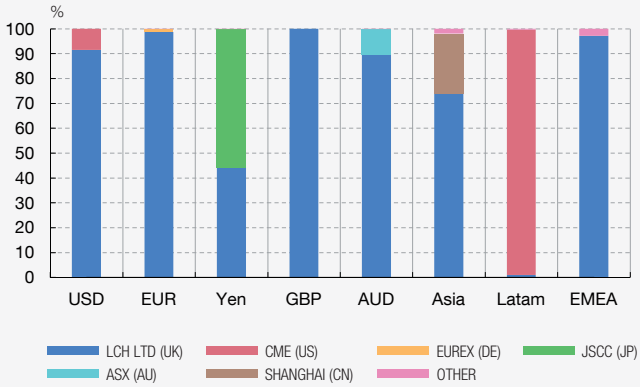


Chart C
INITIAL NET INTEREST INCOME DEPOSITED BY THE FIVE LARGEST MEMBERS. SWAP SEGMENT. 2018 Q3 (b)

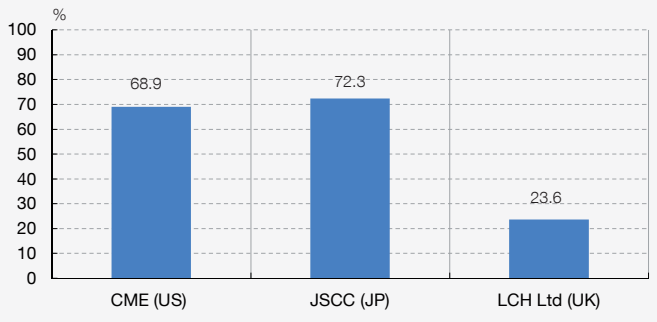
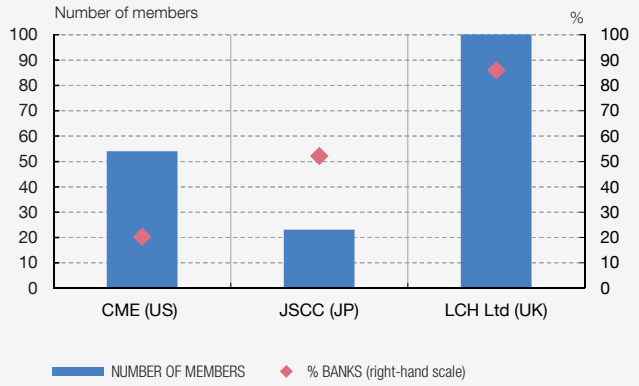


Chart D
BANKS AS CLEARING MEMBERS. SWAP SEGMENT. 2018 Q3 (b)



SOURCES: BIS (Semiannual Derivative Statistics), Clarus FT, CPMI-IOSCO (Quantitative disclosure 2018 Q3), ISDA.

a Swap data also include FRAs. The data for 2016-2018 were extracted from the BIS. Data prior to 2016 were estimated by indexing the rate of change of the percentages reported by ISDA to the data reported by the BIS. The series were adjusted by the possible double counting of BIS data.
b Swap data also include FRAs.

CCPs are, by their nature, entities that are highly interconnected to the rest of the financial system. True, CCPs can link up with one another through interoperability agreements; but these are scarce in practice. That said, there is a notably high presence of common members and services providers, some of which globally systemic banks (G-SIBs). In particular, the 26 main CCPs (domiciled in 15 jurisdictions) are, generally, exposed to at least 10 G-SIBs.

Centralised clearing has the potential to strengthen financial stability. However, it poses elements of systemic risk that must be addressed. Given this concern, regulators have expended considerable effort in reinforcing the soundness and resilience of CCPs. Recently, the focus has been on developing robust recovery and resolution arrangements to mitigate the impact that the potential failure of a CCP would have on financial stability.

The European Commission's initiative on CCPs is in addition to Royal Decree-Law 5/2019 of 1 March 2019, approved by the Spanish government to ensure the continuity of financial contracts in case of a disorderly Brexit. Royal Decree-Law 5/2019 approves the Spanish Government's contingency plans in the event of a no-deal Brexit scenario, including a requirement that British financial institutions operating in Spain adapt to national regulations as well as a transitional arrangement to facilitate this adaptation without disrupting operations. The mitigation of this risk has been strengthened with the European Council's recent agreement to delay Brexit until 31 October.

The Eurosystem's Vision 2020 strategy includes the consolidation of the two largest European financial market infrastructures, TARGET2 (T2) and TARGET2-Securities (T2S), which is planned for November 2021. The Eurosystem owns both infrastructures and is responsible for their management and operations.

T2 is a centralised platform of real time gross settlement (RTGS) for large-value payments. Central and commercial banks can send euro-denominated payment orders to T2 for processing and settlement in central bank money (cash held by banks in accounts at central banks). The system settles payment orders of interbank trading, Eurosystem monetary policy operations and operations of banks participating in the system. Furthermore, the cash balances arising from operations in most euro area clearing and settlement systems are settled in T2.

From a legal standpoint, T2 is structured as a set of national payment systems, each one corresponding to a euro area central bank. Furthermore, certain central banks in the EU whose currency is not the euro participate in T2. The Spanish component, TARGET2-Banco de España (T2-BE) is the main payments system in Spain in terms of amounts processed. Most Spanish banks participate directly or indirectly in T2-BE.

T2S is a pan-European platform which facilitates the centralised settlement of securities operations denominated in euro and in other currencies of central bank money. It brings securities and cash accounts together in the same platform, offering an integrated, neutral and borderless settlement service with highly advanced functionalities. The cash from securities operations is settled in dedicated cash accounts held by institutions in T2S. Functionalities exist which allow institutions to manage liquidity efficiently across T2S and T2. The service offered by the T2S platform is aimed at central securities depositories (CSDs) and based on a framework agreement entered into by the Eurosystem and the CSDs. The latter maintain the business and contractual relationship with their participants.

The T2 and T2S consolidation project comprises the technical and functional integration of the two infrastructures in a common platform which will save maintenance costs, modernise T2 services and improve connectivity and security components through a single point of access for all Eurosystem infrastructures. The messages used for communication will follow the ISO 20022 standard. Consolidation will provide a centralised tool enabling participants to manage, administer and monitor liquidity in all TARGET services: the new RTGS service, T2S and the Target Instant Payment Settlement Service (TIPS). The new RTGS system allows settlement of interbank payments and those from linked settlement systems not only in euro (as currently occurs in T2) but also in other currencies, if the corresponding issuing central bank so decides.

Owing to the breadth of the changes involved in the consolidation, it is impossible for the new system arising from consolidation to coexist alongside the current system. Consequently the migration will be through a "Big Bang" approach for all participants. Each T2 participant is responsible for ensuring that it is ready, for drawing up an adaptation plan and earmarking the necessary funds to the project.

Since 2018 the Spanish banking system has been preparing its adaptation to this operational change, which could have a significant operational impact if the adaptation plans are not adequate. Spanish banks formalised their internal adaptation plans at end-2018 in order to conduct testing and perform the accreditation process by the deadlines. Those institutions which do not achieve accreditation in time will have to assume the risk of being unable to access central bank money and will forego their status as direct participants in the system, at least temporarily. If the Spanish market in general, or certain institutions with large settlement volumes in T2, are unable to connect to the platform on the date envisaged, the negative impact on the ability of these institutions and the financial system, as a whole, to function as normal would be high, since the cash involved in Spain's large volume financial transactions is settled in the T2-BE system.